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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND CERTAIN INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

SECOND SESSION

ON

H.R. 4800

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND FOR SUNDRY INDEPENDENT AGENCIES, BOARDS, COMMISSIONS, CORPORATIONS, AND OFFICES FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1989, AND FOR OTHER PURPOSES

PART 2 (Pages 537–1215)

COUNCIL ON ENVIRONMENTAL QUALITY
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY
FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL ACADEMY OF SCIENCES
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

TUESDAY, MARCH 29, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:05 a.m. in room SD–124, Dirksen Senate Office Building, Hon. William Proxmire (chairman) presiding.

Present: Senators Proxmire, Leahy, Mikulski, Garn, D'Amato, and Domenici.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

STATEMENT OF JAMES C. FLETCHER, ADMINISTRATOR

ACCOMPANIED BY:
- DR. FRANK MARTIN, DEPUTY ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE STATION
- DR. LENNARD FISK, ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE SCIENCE AND APPLICATIONS
- DALE MYERS, DEPUTY ADMINISTRATOR
- THOMAS CAMPBELL, COMPTROLLER
- REAR ADM. RICHARD TRULY, ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE FLIGHT

OPENING REMARKS

Senator PROXMIRE. The subcommittee will come to order. Today, we will hear from Dr. James Fletcher, Administrator of the National Aeronautics and Space Administration, who will appear with his colleagues to justify the agency's fiscal year 1989 budget request.

I don't have to tell you, Dr. Fletcher, that your request for a 30-percent increase in a year when total domestic discretionary spending increases are limited to 2 percent by the legislative-executive Summit Agreement places your budget in some jeopardy. Furthermore, we will have to accommodate a further budget increase of 16 percent in 1990 if the projections contained in the President's budget document are correct.

You have a great many demands on your budget, but the biggest driver over the next few years will obviously be the space station. You are requesting funding of $967.4 million for the station this year, plus advanced funding of $2.1 billion in 1990 and $2.9 billion in 1991. By 1992, the station budget will be up to $3.4 billion. Those figures don't include operating costs.

This may well be the year of decision for the station, and that decision could be driven by two factors: First, what kind of allocation this subcommittee receives under the budget allocation process; and second, our willingness to fund the station at the expense of the other NASA programs.

Dr. Fletcher, this will be a swan song of sorts for both of us. You have been trekking to the Hill to present your budget before this chairman since the early seventies with a notable interruption for the two of us by my distinguished colleague, the fine Senator from Utah, who sits on my left who is an expert in this area, more than anybody else in the Congress, but I want you to know that it has been a pleasure working with you, sir. Before you go ahead, I want to call on Senator Garn.

SENATOR GARN'S OPENING REMARKS

Senator GARN. Thank you, Mr. Chairman, and I will not be long, but I do think it is important to talk about the difficulty of this budget year.

Mr. Chairman, you have outlined it correctly. The results of the Budget Summit last year made it very difficult for a fiscal year 1988 budget; it will make it even more difficult for fiscal year 1989. But I think it is time Congress started looking to the future rather than at the present or the past.

We seem to be very good at making budget decisions on the past or the present and not very good at looking beyond the November election every other year. Obviously, I have a bias toward not just space, but to science in general.

Congress' record over a period of several years has been disastrous, in my opinion, in the whole area of function 250. We don't have enough engineers in this country; we don't have enough scientists; we are not training enough math and science teachers in this country to do an adequate job in the grade schools and the high schools of this country; we are dropping dramatically behind the Soviet Union in the training of those types of people and the Japanese and the West Germans. The greatest advantage this country has ever had has been our technology, always. I am not just talking about space or NASA; I am talking about in general, and our dominance in the world markets has been because of our technology. We are losing that edge very, very rapidly. No one is more aware of the budget difficulties this country has than I.

But what we are shortchanging is that technological advantage all across the board, from NASA, the National Science Foundation, to basic research and development in this country, to training those engineers and scientists and math teachers, and I think it is a shame; I think it is irresponsible on the part of Congress. The space station is only part of that total equation. It is a shame that we don't have Congress look down the road, not just beyond November 1988, but maybe 25 years down the road, a long time, when we are all gone. This is not my swan song. People have got to put up with me at least until the end of 1992.

I don't intend to make any apologies for my support of science and technology in this country. If we shortchange this whole function 250 area for all of the more immediate programs that are more politically appealing, we damage this country dramatically in the future. This Congress will bear the responsibility for that some day when we are a second-rate nation, as we are becoming in this area, and we are wondering why the Japanese and the Germans and other European countries and the Soviet Union are so far ahead of us.

I think it is time we started making some policy decisions for the future and not just looking at the numbers crunchers down at OMB or the politically expedient decisions that help some of us get reelected or not reelected in 1988 or 1990.

I don't intend to stop yelling, screaming, doing whatever I can to pump this idea that this country is dropping behind, and NASA is part of that, an agency that has done more to attract scientists and capable people than any other agency in the history of this federal government. Yet we are spending, in that area for NASA, less than 1 percent, less than 1 percent of the entire national budget on the future of this country. Tens of thousands of jobs out there that haven't even been invented yet because we don't know what they are.

When I look back, I think in my relatively brief flying career of 30 to 35 years, the incredible differences compared to listening to A's and N's, dit-das and da-dits, and bisignal zones and on course and manual direction finding, all of that, and now seeing Aztecs and little Piper Apaches with nine white points. It is incredibly different when you project down the road 25 or 30 years. When we shortchange NASA and the National Science Foundation in the areas that I have talked about, that is what we are shortchanging.

Nobody is going to notice in the next year or two; it is going to be 20 or 25 years down the road when we look back, and what we don't have in the improvement of the standard of living on the face of this Earth for every man, woman, and child, because we are just so damn political that we have got to spend money that buys things before the next election rather than having the foresight to look down the road.

I want people to remember what I said: Less than 1 percent of the entire national budget. We spend several billion dollars more per year in food stamps in this country; we spend more on chewing gum; we spend more on candy bars. The list goes on and on and on of what we spend both privately and publicly for things that are of not much value, and yet we can't find even 1 percent of our total national budget for the future of science and space research and development and space travel in this country.

So yes, I am disturbed, and yes, I am disappointed, and I wish we could start placing a higher priority in this Congress on the future rather than the present.

Thank you, Mr. Chairman.

Senator PROXMIRE. Thank you, Senator Garn.

Dr. Fletcher, if you would summarize your statement first, and introduce your colleagues at the table, we would appreciate it.

Dr. FLETCHER. Yes, Mr. Chairman. I would like to submit my statement for the record and summarize it.

Senator PROXMIRE. We will put it in full in the record.

INTRODUCTION OF ASSOCIATES

Dr. FLETCHER. The colleagues at the table with me, Mr. Chairman, are Dr. Frank Martin, Deputy Associate Administrator for Space Station on my right; Dr. Len Fisk, Associate Administrator for Space Science and Applications; and Mr. Dale Myers, my Deputy Administrator. On my left is Mr. Thomas Campbell, who is the Comptroller of NASA; and on the extreme left is Admiral Truly, who is Associate Administrator for Space Flight. We have other associate administrators behind me to back me up in case I get into trouble, Mr. Chairman. I would like to proceed with the highlights of the statement.

Senator PROXMIRE. Go right ahead.

DR. FLETCHER'S STATEMENT

Dr. FLETCHER. Despite your appropriate concern about this tightly constrained budget year, I want to emphasize that this is a crucial year for NASA, a year with opportunities and hazards that will make or break the nation's civil space program.

There are three principal reasons for this: First, this is the year that we will restore the space shuttle to safe flight. This is NASA's job; we are working on it; things are going well, and we are determined to succeed.

Getting the shuttle flying again is the key to revival of the space program and to exciting missions of discovering life in outer space telescope and the flights to Venus and Jupiter which will be launched as soon as we are able.

PRESIDENT'S NATIONAL SPACE POLICY

The second point, this is the year the President has enunciated a national space policy. This policy reaffirms the national goal of U.S. leadership in space. It stresses the key importance of the space station for our future in space.

It also recognizes the emergence of a commercial sector in the space arena and proposes to create opportunities for U.S. commerce in space. For the first time, it sets the new long-term national goal of expanding human exploration and activity beyond Earth orbit into the solar system. It opens the door to future missions to the Moon and Mars.

The President's policy sets goals and a clear course for the U.S. space program in the 21st century. I believe it will have strong support in Congress and the public, where there has been strongly articulated concern that the space program has needed a new sense of direction, pointed at challenging new goals for the future: Support by the Congress of the President's policy will make this year a major milestone in the U.S. space program.

OVERVIEW OF NASA'S FISCAL YEAR 1989 BUDGET REQUEST

The third point and the most important point: This is the year of decision on the NASA budget. This is not an ordinary budget year; it is not an overstatement to say that the entire future of the U.S. civil space program rides at risk in this budget.

Let me see if I can explain that. The fiscal 1989 budget we are presenting which totals, as you say, $11.5 billion, comprises three main elements: First, it provides the funds required in fiscal 1989 to build up the flight rate of the space shuttle from 1 in fiscal 1988, to 7 in fiscal 1989, and to 10 in fiscal 1990.

These funds are what it takes to get us back into space and start flying off the backlog of important national defense space science, space technology, and commercial payloads that have been on hold for these past 2½ years.

Second, it provides the necessary buildup, as you mentioned, of the space station funding required in the second year of hardware development. The fiscal 1989 requirement has been cut back and the schedule revised to reflect the congressional fiscal 1988 reduction in first-year funding for space station development.

Third, it provides for continuity and advances in space science, aeronautics, and space technology. Notably, initiation of the Advanced X-ray Astrophysics Facility [AXAF], for major advances in astrophysics, development of an advanced solid rocket motor to upgrade the shuttle and solid rocket booster. As you know, the Congress has been requesting us to come up with a redesigned solid rocket motor and to open this field to competition, and the advanced solid rocket motor does that; in addition, the new Pathfinder Program for developing the advanced technologies that will be required for future decisions to undertake human exploration beyond Earth orbit.

U.S. LEADERSHIP IN SPACE

The point I want to emphasize is that failure to provide the funds required in fiscal 1989 for any one of these three main elements of the budget will cut the space program off at the knees and effectively keep the United States from achieving leadership in space.

If we don't build back space shuttle operations, the backlog of vital defense and science missions will remain on the ground, unfulfilled.

American astronauts will be denied effective access to space and our hopes for the restoration of future U.S. leadership in space will be extinguished.

If we don't move ahead with the space station, the teams will be disbanded and the goals of a permanent laboratory in space and the base in space for future exploration will have to be abandoned or deferred indefinitely.

If we can't pursue aggressively science and advanced technologies, we will not have the technological foundation we need for future achievements and the goal of long-term U.S. leadership in space will become an idle dream.

Also, of course, the country at large will lose the benefits and economic stimulation, as Senator Garn has indicated, here on Earth, of the advances in technology that we would make. This is why I say that both the near- and the long-term futures of the United States are at risk in the fiscal 1989 budget decisions that will be made this year. I am perfectly aware that the fiscal 1989 budget that NASA requires and which the President has recommended does represent a substantial increase over the total appropriations for fiscal 1988.

The plain fact, however, is that this increase is almost entirely due to the built-in increases for building back the shuttle flight rate and proceeding with the space station development on the basis approved by Congress in fiscal 1988.

The other increases are for advanced technology and facility improvements that must be initiated now to assure future U.S. leadership in space and aeronautics.

The President has faced these realities squarely and provided NASA the increases that it must have and has done so within the tight overall budget constraints agreed to by Congress and the President last year, as you mentioned.

The President has provided strong policy leadership and a budget to back it up. Now it is up to Congress, and I am confident that after your careful reviews, you will recognize the need and provide to NASA the strong, bipartisan support in Congress that we have enjoyed in the past.

Before closing, let me remind you that the space station is really the key to the future of the U.S. space program, both for the full exploitation of space and Earth orbit and for human exploration beyond Earth orbit. It also represents a major commitment for international cooperation with our friends and allies.

We have now concluded a memoranda of understanding with Canada and the European Space Agency and are very near conclusion of an agreement with Japan.

All of these are on the international development of the space station. While on that subject, I would like to announce that Mr. James Odom will be moving from Marshall Space Flight Center to become Associate Administrator for the Space Station, beginning April 1.

PRIVATE SECTOR ROLE IN SPACE

Finally, I want to point out that the fiscal year 1989 budget will directly support a key element of the President's national space policy, the expansion of the private sector role in space. NASA will continue to implement the mixed fleet of expendable launch vehicles begun in fiscal year 1988 and will procure the needed expendable launch vehicle services commercially from the private sector whenever possible.

We will continue our programs to encourage and work cooperatively with private business concerns that wish to undertake enterprises in space.

As a specific undertaking, NASA is offering, on a competitive basis, to lease a major portion of a commercially developed and financed space facility to be built by a private company for microgravity research and manufacturing. In addition, NASA will expand the opportunities available to the commercial sector to participate and effectively become partners in the space station program.

DR. FLETCHER'S CONCLUDING REMARKS

In summary, Mr. Chairman, I believe the President's fiscal 1989 budget for NASA provides the necessary funding for the right program at the right time. This budget supports what is called for this year: Increasing flight rates for the shuttle and expendable launch vehicles to meet the mission requirements; moving ahead with space station development; and investing in science and technology in support of the near- and long-term goals of our national space policy.

I urge the Congress to join the President, as they have done in the past, in a national determination to remain foremost among space-faring nations.

Mr. Chairman and members of the subcommittee, this concludes my oral statement, but before we proceed to questions, I would like to say something. I would like to commend you, Mr. Chairman, in this, your final year of distinguished service in the Senate, for the intensive review of NASA's programs and, more generally, for your long-term efforts to improve effectiveness in all government programs.

Although we don't always agree on matters of program and policy, I personally have benefited from and, indeed, I am grateful for your fairness and courtesy in these hearings. I sincerely wish you well in your future endeavors, and I will be pleased to answer your questions.

[The statement follows:]

PREPARED STATEMENT OF JAMES C. FLETCHER

Mr. Chairman and distinguished members of the subcommittee, I am particularly pleased to present to you the President's proposed budget for NASA for FY 1989. We are in a crucial year for NASA and the Nation's civil space program. This is the year in which we will restore the Space Shuttle to safe flight. This is the year in which we must reinvigorate United States' leadership in space. And this is the year in which we must make fundamental technology investments in the Nation's future in space.

The FY 1989 budget reflects the strong priority the President places upon the Nation's civil space program. Much has recently been accomplished to lay a solid base for our FY 1989 budget. We are completing a measured reexamination and restoration of the total Space Transportation System, to the point that we are confident that we will resume safe flight in August, and build up to a total of seven flights next year, with ten flights the following year. Full-scale development of the permanently manned Space Station is beginning, pointed to operational capabilities in the mid-1990s. Key space science missions are in development to take full advantage of launch opportunities on Shuttle and expendable vehicles. Bold steps have been initiated to restore the Nation's civil research and technology base. And the President has issued a comprehensive new National Space Policy, designed to guide United States' activities in space well into the future.

The President's new space policy reaffirms United States space leadership as a fundamental national objective. It reaffirms the Nation's commitment to a permanently manned Space Station as a key to that leadership. The policy adopts as a long-range goal of the United States the expansion of human presence and activity beyond Earth orbit into the solar system, and endorses the initiation of a focused advanced technology program to lay the foundation for later decisions on specific paths our future space exploration will follow. It recognizes the emergence and the importance of a commercial sector in the space arena, and proposes to create new opportunities for U.S. commerce in space.

Mr. Chairman, the President's FY 1989 budget for NASA is designed to support and implement the responsibilities and objectives outlined for NASA in this comprehensive National Space Policy. This budget provides NASA with the resources required to carry forward our ongoing programs and to take the essential next steps to set the foundation for continuing the United States' leadership in space into the future. Now we need your support and the full support of the Congress for this cornerstone budget.

The President's budget calls for a total of $11.5 billion in new budget authority: Research and Development, $4.4 billion; Space Flight, Control and Data Communications, $4.8 billion; Construction of Facilities, $285 million; and Research and Program Management, $1.9 billion. While this total budget request represents a substantial increase over the amount appropriated for NASA in FY 1988, most of the increase is required to carry forward the ongoing program approved by the Congress in FY 1988, particularly in the Space Transportation and Space Station programs. The FY 1989 budget recognizes that the planned increases are essential to carry out our national commitment to return the Space Shuttle to flight, and to proceed with the development of a permanently manned Space Station.

The FY 1989 budget for the Space Transportation System has been formulated to ensure a confident return-to-flight. FY 1989 funds will support the safe return to Space Shuttle flight operations at a sustained rate in order to restore our Nation's access to space. The effort to redesign the Solid Rocket Motor [SRM] has been, and remains, the driver behind the return-to-flight schedule. Three full-scale firings have been conducted during the past year and three more are scheduled between now and mid-July. Performance of both the redesigned field joint and the case-to-nozzle joint have been superb. Following the Development Motor-9 firing of the SRM, NASA made a determination to employ an earlier successfully tested outer boot ring design for the SRM nozzle assembly. This resulted in a delay in delivery of the flight aft SRM segments to the Kennedy Space Center; however, all of the segments are now at Kennedy and stacking is due to start in early April. All three Space Shuttle Main Engines [SSME] have completed acceptance testing, been delivered to KSC, and are installed in Discovery. Excellent progress is being made on our Failure Mode Effects Analysis, Critical Items List, Hazard Analysis, and Design Certification Reviews. Although considerable work remains to be done, we are confident of completion without impact to launch schedule plans. Movement of Discovery from the Orbiter Processing Facility to the Modification and Refurbishment Facility is scheduled for April. In May, Discovery will move to the Vehicle Assembly Building for mating with the external tank and SRMs. Rollout to the launch pad and the flight readiness firing is scheduled for June, and launch of the STS-26 is planned for August. As the Space Shuttle goes back into operation, we will begin flying off the backlog of defense and space science missions that have been on hold during the shuttle recovery period. The first flight will include replacement of the Tracking and Data Relay Satellite lost on Challenger. Shuttle flight activity in the ensuing months will include three high priority national security missions, another TDRS, retrieval of the Long Duration Exposure Facility [LDEF], and three major space science missions: the Magellan mission to map the planet Venus, the Hubble Space Telescope, and the Galileo mission to Jupiter.

FY 1989 funding will also provide for launch of selected Science and Applications missions using expendable launch vehicles consistent with implementation of a mixed fleet approach to meeting the Nation's space transportation needs; completion of the implementation of recommendations of the Presidential Commission on the Space Shuttle Challenger Accident; continued construction of a fourth Space Shuttle orbiter; and enhanced capital investment in space transportation systems. These investments include initiation of improvements in Space Shuttle performance, notably programs for an Advanced Solid Rocket Motor [ASRM], and for extending the orbital staytime of the Shuttle. We also will continue to study aggressive advancement in space transportation as full participants in the Advanced Launch System [ALS] program. We expect to complete our studies of the Shuttle C (Cargo) concept in 1988 which will be evaluated as part of the Joint NASA/DOD ALS Program.

The Space Station program remains a top priority of NASA, reflecting the Administration's steadfast commitment to the development of a permanently manned complex in space. The Space Station will provide opportunities for invaluable contributions to materials processing research and life science, as well as expanded opportunities to observe the Earth, the solar system and the universe. It will provide definitive information concerning long-term human endurance in the zero-gravity environment of space. As our national needs evolve, the Space Station could also be an indispensable base for servicing coorbiting observatories and for potential future manned missions. Only with such a permanently manned orbital base can the Nation develop the technology and systems needed to support future decisions on the long-range goals of expanding human presence and activity in space.

During the last year, the Space Station program has made significant progress. We have selected the principal hardware contractors for Space Station development, after an extensive and thorough competitive procurement, as well as several key program integration and support contractors. The National Research Council [NRC] reviewed the program and examined projected costs, transportation issues, and configuration. In parallel with the NRC review, NASA reexamined transportation requirements and furnished a report to the Congress as requested. We are nearing completion of an analysis which will rephase the schedule for Station deployment in light of the FY 1988 budget reduction and the requested FY 1989 budget. That analysis will also examine options for an early man-tended capability. We have initiated a preliminary design and definition effort for the Station's Flight Telerobotic Servicer. We have developed management concepts for Station science activities and Station operations. We are near agreement with the European Space Agency, Japan and Canada on cooperation in Station development and operations.

In FY 1989, the Space Station will move into full-scale development and construction of key Space Station facilities. Detailed technical design of Space Station systems and elements will be accomplished, aiming toward a Preliminary Design Review in late 1989. This will provide a final set of Space Station technical specifications which fulfills performance requirements within the agreed upon cost envelope.

The President's budget requests $967.4 million to continue development of the Space Station. Consistent with the recommendations of the National Research Council and the Congress to provide a stable funding environment, the President has also requested a three-year advance appropriations commitment totalling $6 billion through FY 1991. Later this year, the President will request a total program cost ceiling. The FY 1989 Space Station is critical; failure to provide the full budget request could be a severe setback to the Nation's commitment to U.S. leadership in space.

The FY 1989 budget also underlines the high priority accorded by the President to science and technology generally. This reflects a recognition of the crucial roles of science and technology in the Nation's future. Because investments in FY 1989 will determine the character of the Nation's scientific and technological leadership posture in the decade of the 1990's and beyond, now is clearly the time to emphasize our efforts in these areas. The budget provides for accomplishment of ongoing science programs in a timely manner, provides new flight opportunities in the near term, and moves deliberately toward development of science for the Space Station and its platforms.

In particular, we are moving forward in astrophysics to extend our world leadership in the exploration of space with the initiation of a major new "Great Observatory" project, the Advanced X-Ray Astrophysics Facility [AXAF]. AXAF will provide the capability to observe x-ray sources in the universe with unprecedented completeness and resolution. AXAF, together with the Hubble Space Telescope and the Gamma Ray Observatory, will provide a comprehensive physical picture of the universe, supplying a scientific resource more powerful than the sum of the capabilities of these three observatories considered separately.

The budget also underscores the President's newly articulated long-range goal of expanding human presence and activities beyond Earth orbit into the solar system. NASA proposes to initiate, with $100 million in FY 1989, a "Pathfinder" program of detailed studies and systematic development of technologies necessary to enable and support a range of future manned and unmanned missions, oriented toward a future Presidential decision on a specific focused exploration program. Pathfinder will extend the critical rebuilding of NASA's technology base which was initiated last year with the Civil Space Technology Initiative [CSTI]. While CSTI is developing technology to enhance access to Earth orbit and support effective operations and science missions in Earth orbit, Pathfinder will support a wide range of possible future space missions beyond Earth orbit. Mission studies in NASA's newly established Office of Exploration have served to identify a set of technology prerequisites, common to a variety of future missions, which the Pathfinder program will help supply. The Office of Exploration is now developing a set of candidate mission scenarios which include a range of science, exploration and technology development objectives to accomplish the goal of expanding human presence and activities into the solar system. This effort will provide detailed options oriented toward a future decision on focused exploration. While focused, the Pathfinder program is also dynamic—with continuing studies that will refine the program to ensure that critical, long-lead technologies are emphasized.

Significantly, the FY 1989 budget will directly support a key element of the President's National Space Policy: the expansion of the private sector role in space. We will continue our programs to encourage and work cooperatively with private business concerns wishing to undertake enterprises in space. Several initiatives are underway to involve the private sector in developing the infrastructure necessary for research and expand manufacturing in space. NASA will continue to expand the mixed fleet of expendable launch vehicles begun in FY 1988 by procuring additional needed Expendable Launch Vehicle [ELV] services, from the private sector whenever possible. Commercially developed upper stages are also being used where appropriate for planned missions. Commercial microgravity experiments to be conducted as secondary payloads are being manifested aggressively on planned Shuttle missions. As a major specific undertaking, NASA will act on behalf of the Government to offer on a competitive basis to lease a major portion of a commercially-developed and financed space facility to be built by a private company for microgravity research and manufacturing. NASA will also make its best effort to launch the Spacelab in the Shuttle in the early 1990's and to make the expanded external tanks available for five years, at no cost, to all feasible U.S. commercial and non-profit endeavors.

For the Space Station, NASA will, in consultation with OMB, revise its guidelines on commercialization, to clarify and strengthen the Federal commitment to private sector investment and involvement. These guidelines, to be published in the Commerce Business Daily early this year, will incorporate a clear statement of policy, criteria for evaluating proposals including the amount of private sector investment and the degree of risk sharing, and procedures for submitting and reviewing these proposals. NASA has previously solicited proposals, as part of the Space Station bidding process, to provide elements of the program on a commercial basis. We will also consider proposals that accelerate private sector investment in development and operation for goods and services not already contracted. We will seek to rely on private sector design, financing, construction and operation of future Space Station requirements, including those under study.

The FY 1989 program will support a variety of other important programs in science, aeronautics, space technology and space operations. Key elements of the FY 1989 science program include Shuttle launches of the Hubble Space Telescope, the Magellan mission to Venus and the Galileo mission to Jupiter, as well as the launch of the Cosmic Background Explorer on a Delta launch vehicle. NASA will continue the development of the Gamma Ray Observatory, the Upper Atmosphere Research Satellite, the Mars Observer, the Ocean Topography Experiment and the Global Geospace Science Mission. Development of relatively low-cost free flying payloads in the Explorer tradition will continue to progress in FY 1989. Development and integration activity will proceed in preparation for planned Spacelab missions and for secondary payloads to conduct microgravity and life sciences research and experimentation.

Augmented effort will be directed toward development of a new generation of flight hardware for advanced experiments in life sciences and microgravity materials sciences, initially on Spacelab and the commercially-developed space facility, leading to comprehensive long-term research on the Space Station. Similarly, life sciences experiment hardware will be developed for use on Spacelab, Space Station, and any suitable commercial space facilities that become available.

NASA continues to pursue a comprehensive strategy to strengthen the space research and technology base. In addition to the continuation of the Civil Space Technology Initiative and initiation of Pathfinder technology efforts, NASA will, in FY 1989, expand its University Space Engineering Research Program to help foster creative and innovative concepts for future space systems and expand the Nation's engineering talent base for research and development. NASA's efforts in transatmospheric research and technology are aimed at accelerating the development of critical technologies intended to enable a potential new class of vehicles in the future capable of flight to orbit and/or hypersonic cruise. Work will continue in the development of technology for hypersonic and transatmospheric vehicles in the National Aero-Space Plane [NASP] program with emphasis on lightweight thermal structures and subsonic and supersonic propulsion. Possible opportunities in this regime include vehicles to transport people to orbit, hypersonic transport between points on earth and military applications.

The FY 1989 Aeronautics Research and Technology program is committed to developing the technology basis for improving the Nation's competitiveness and clear-cut product superiority in the international marketplace, enhancing the safety of aviation, and increasing the margin of the country's preeminence in aviation for national security. Technologies are being pursued that offer the potential of a major increase in aircraft capabilities and substantial positive impact on U.S. competitiveness. Research efforts have been expanded in composite materials, advanced propulsion, and aviation safety.

The FY 1989 Space Operations program will continue to provide vital tracking, command, telemetry, communications, data relay, and data processing to support operational requirements for NASA's flight programs. The transition from a ground-based tracking network to a space-based tracking capability for low-Earth orbital missions, which began with the first Tracking and Data Relay Satellite [TDRS-1] in orbit, is continuing. The next TDRS spacecraft is scheduled for launch on STS-26, with the following TDRS currently scheduled for STS-29. The Tracking and Data Relay Satellite System [TDRSS] will be operational when three fully functioning spacecraft have completed their individual and integrated acceptance tests. The present ground tracking network is being retained until the TDRSS deployment is complete. A procurement is underway to replace the TDRS lost in the Challenger accident to ensure continuity of service through the mid-1990's. Major upgrades of the Space Operations network are also underway to meet requirements of the Voyager encounter with Neptune in August 1989, as well as future mission requirements.

In FY 1989, the Safety, Reliability, Maintainability and Quality Assurance [SRM&QA] program will continue to support NASA goals through activities to promote safety and reduce program risk. While a significant portion of the program effort continues to be directed toward safely returning the Shuttle to flight, attention is also devoted to unmanned space flight and the aeronautics program. Funds will support activities to implement the reporting and documentation of significant problems, assess problem resolutions and analyze trends, and to meet other safety systems requirements.

The FY 1989 Construction of Facilities [CofF] request continues to preserve and enhance NASA's facilities so that research, development and testing capabilities and effectiveness can be maintained. The request is substantially larger than previous years, and marks a concerted effort on NASA's part to restore and modernize a number of key facilities. The demands for NASA's unique wind tunnels are growing with research on high-speed vehicles, including the emergence of the NASP program, and development support for a new generation of military aircraft. In order to ensure wind tunnel availability to meet these demands, an Aeronautical Facilities Revitalization Program has been formulated which begins a structured, multi-year effort to restore and modernize NASA's aeronautical research and development facilities for productive use for the next decade and into the 21st century.

The effective conduct of NASA's programs demands a strong technical and management capability within the Agency. In recognition of this need, last year's budget provided for an increase of 625 people. The FY 1989 budget recommends a further increase of 525 people. This increased capability, which will be applied primarily to strengthen the space transportation program including safety and reliability activities, is a key ingredient in moving ahead in space.

Mr. Chairman, spending on NASA space research and technology development benefits the U.S. economy, industry, education, agriculture, and general welfare. Benefits range from the global: communications satellites which have made events immediate, information instant, and education possible almost anywhere; to the national: advanced welding techniques which allow flawless, continuous welds, improving industrial productivity and competitiveness; to the community: lightweight breathing apparatus which have drastically reduced inhalation injuries to firefighters; and to the personal: insulin infusion pumps that provide diabetics with preprogrammed, correct amounts eliminating multiple daily injections. If history repeats itself, every nickel invested in new space ventures will be returned many fold to the economy. Space can do this again, and give America the advantage in such new fields as artificial intelligence, robotics, teleoperation, process automation, hypersonic flight, optical communications and data processing, ultra high strength and high temperature materials and many more. The most significant economic effects of NASA spending are the long-run productivity advances from new technologies and techniques which improve industrial capacity and stimulate development and growth of many new industries.

In summary, Mr. Chairman, I believe the President's FY 1989 budget for NASA provides the necessary funding for the right program at the right time. The budget supports what is called for this year—increasing the flight rate for the Shuttle, augmented by expendable launch vehicles, moving ahead with Space Station development, and carrying forward our science, technology and aeronautics programs. This budget is needed for United States leadership in space, and is a sound investment in our future use of space. I call upon the Congress to join the President in an affirmation of National determination to remain foremost among spacefaring nations.

Mr. Chairman, that concludes my prepared statement. I would be pleased to respond to quetions.

INCREASES IN THE SPACE PROGRAM

Senator PROXMIRE. Thank you very, very much Dr. Fletcher. I appreciate your gracious comments about my being a chairman in the Senate.

Perhaps you can help us, Dr. Fletcher. You are an engineer and mathematician. You have a fine, logical mind. Over the years, I understand how we are going to get through 1988 and 1989 with the agreement with the administration, and you say you support that agreement as it is.

But over the years we are going to have a very big increase in the space program if we go ahead, as you argued we should. Where are we going to get the money for this? Are we going to increase taxes, or are we going to cut military spending? Can we squeeze social programs more than we have? I notice that both Republican and Democratic candidates for President are arguing you have to spend more for education, for instance, and some other social programs.

Where is the money coming from?

Dr. FLETCHER. Well, Mr. Chairman, I am not an expert on the federal government, but I think it is appropriate to say that a good bit of the increase that you describe is simply cost-of-living increases, which we are obliged to add at the rate of 5 percent per year in the outyears.

The appropriate level for NASA ought to be in the level of, ultimately, when the space station is fully underway, of the order of $13 billion in constant dollars, and it will stay that way and begin to drop in the outyears. That, as Senator Garn has mentioned, is about 1 percent of the federal budget. It seems to me that with important programs such as the programs I have outlined and the ones to come, the country ought to be able to find something like one-tenth of 1 percent increase in the total federal budget that is required to fund NASA in those outyears.

Senator PROXMIRE. Well, we have looked very hard, and, as you know, there are tremendously persuasive claims in almost every area.

Let me be specific now. NASA is requesting a budget increase of about 30 percent in 1989 and according to your 5-year projections, you will be requesting a further increase of 16 percent in 1990. For purposes of comparison, I went back to last year's outyear NASA projections as contained in the President's 1988 budget, and I compared them to this year's projections.

This is what I found: Last year's administration budget anticipated NASA appropriations of a total of $43.5 billion for the years 1989 through 1993.

The 1989 budget projections for those very same 4 years is $53.6 billion, a cost growth of almost 25 percent. What factors caused this very big increase in projected budget costs?

SPACE FLIGHT BUDGET RUNOUT COST

Dr. FLETCHER. Mr. Chairman, the major part of the increase, just over half of the increase, is caused by the increased runout for the space flight budget. This includes getting the shuttle back at the appropriate flight rate that is required to work off our backlogs; and it also includes the expendable launch vehicles that are needed for working off the rest of the backlog.

Some of the reasons for the increase for the space shuttle are as a result of the required improved safety, a lot of it due to the recommendations of the Rogers Commission, which, as you may recall, recommended significant increases in manpower, quality assurance, increased testing, and so on.

In addition to the shuttle itself, the advanced solid rocket motor represents a part of that increase, and then increased different uses of the space shuttle; for example, the extended duration orbiter, is also included in that increase.

SPACE STATION COST INCREASE

Another large part of the change probably has to do with the space station itself, which, as you properly point out, has to increase from this year to something close to $2 billion in the fiscal 1990.

It will reach that equilibrium level and stay there until the development is complete. What is left over in that increase are the new programs such as Pathfinder, which is about $0.7 billion over that period, and AXAF, the Advanced X-ray Astrophysics Facility, about $0.6 billion, and so forth. Getting back to the beginning, nearly all of it is required by the flight requirements for the space shuttle and expendable launch vehicles.

Senator PROXMIRE. This is a 25-percent increase in costs you didn't anticipate last year; is that right?

Dr. FLETCHER. Yes, indeed. We did not anticipate all of them last year. We are still working on the need for responding to all aspects of the Rogers Commission report, and we are finding some areas of our own which need fixing, and when you put all that together, that is what is required. It is a significant increase, but nevertheless it is required.

CUTS IN NASA'S BUDGET REQUEST

Senator PROXMIRE. Dr. Fletcher, I am going to ask you a question I am sure you won't want to answer, but it is an issue we both have to confront. I sincerely hope you will be able to give us some guidance on it. Last week the House passed a budget resolution that assumed a cut of about $1.25 billion in NASA's budget request.

If we had to make that kind of a cut, where should we take it?

Dr. FLETCHER. Mr. Chairman, that is always a difficult question to answer. Let me just say that that large a cut in this crucial year for NASA would be devastating to NASA. I am not sure we could continue on with the space station with that large a cut, however, I think we would have to look at what other programs could be cut to accommodate the space station because of our commitments to international partners.

There are not too many places that you can cut without being extremely inefficient, because a lot of the payloads that are left over, not flown, shall we say, some of them have an investment of $1 billion or $1.5 billion. It doesn't make sense to cut those programs out at this late date. It makes sense to fly them as soon as we can.

Senator PROXMIRE. Did you say you might have to cancel or postpone the progress in the space station?

Dr. FLETCHER. I don't want to answer that question until I have looked carefully at the budget, but you cannot continue with the hardware contractors at a level below last year's, for example. It just doesn't make sense, because a lot of the dollars that are going into the space station program are for management and for systems engineering.

Let me just give you a feeling for the situation. The runout from last year's budget was $11 billion, and that is a $2 billion increase. Only about six-tenths of that was for the space station.

So you can see that the $1.25 billion is just not enough to do the space station and a lot of other things. So we would have to cut programs out in order to fund the space program, and I just don't have any idea which ones would have to be eliminated.

SPACE STATION FUNDING

Senator PROXMIRE. As you indicated in your opening statement, you are requesting $967 million in fiscal year 1989 for the space station. Last year, during Senate floor debate on the 1988 HUD-Independent Agencies bill, Senator Garn read a letter from you which indicated a reduction in station funding from the $558.7 million contained in the Senate reported bill to $440.7 million as proposed by the DeConcini amendment. I am quoting now, ". . . would lead me to recommend termination of the present competition for the four major work packages."

As we all know, you went forward with the work packages and the station funding was cut to $425 million, substantially below the level proposed by the DeConcini amendment. Did you consider canceling the station program when you learned you would only receive $425 million?

Dr. FLETCHER. I certainly did, Mr. Chairman, but I would like to remind you that last year we had the $425 million plus about $100 million, $90 million or so, left over from the fiscal year 1987 budget. That put us over the $500 million that I said was required in order to keep those hardware contractors alive.

Senator PROXMIRE. Didn't you know last year that that money would be left over just a month before that $425 million was appropriated?

Dr. FLETCHER. We had no knowledge of what was going to be in the budget. At the time that I made that statement, you were still deliberating about the budget.

Senator PROXMIRE. But you knew that would be left over?

Dr. FLETCHER. We had hoped that there would be at least $100 million left over, but the Congress has mysterious ways, and we had no guarantee that that would be the case.

Senator PROXMIRE. If we could only provide, say, $700 million for the space station in 1989, and if we had to take that money from other NASA programs, do you think it would be wise to continue the station?

Dr. FLETCHER. If you had to take $700 million out of other programs?

Senator PROXMIRE. If we could only provide $700 million for the space station and we had to take that money from other NASA programs.

Dr. FLETCHER. I would have to take a look at that, Mr. Chairman. That would be a tough question, because all the other programs that I can think of are not only important, but they are half funded already.

Senator PROXMIRE. Let me ask the question, then, in a little different way. What is the minimum necessary to maintain a viable space station program?

Dr. FLETCHER. I would say the minimum necessary to maintain a viable space station program is $1 billion or the $950 million that we have requested. Maybe what you meant is, what is the minimum that we could skinny by with and still keep it alive, and that is a lower number, but I can't really give you a figure as to how much lower than the $950 million.

Senator Proxmire. My time is up.

Senator Garn?

Senator Garn. Thank you, Mr. Chairman.

Dr. Fletcher, the chairman has asked you some tough but fair questions in a difficult budget situation that we are all very well aware of.

I would like to try and get back to see if you can give me some answers on the type of thing I was talking about in my opening remarks, and I realize that I am asking for some general statements, but I am trying to develop an awareness of what we lose if we do not proceed rather than just talking about the numbers. I am not just talking about the space station, though sometime I would like to try and go backward and look at scientific achievements and benefits we have today; that our budgets have been cut back to previous levels and they have been eliminated, what we would have lost and what we would not have today.

I suppose that is an analysis that would be very helpful to do, to make some assumptions, if back in fiscal 1975 or whatever we hadn't done this, we wouldn't have this today and the benefits of whatever "this" is, if you follow my line of thinking.

What I am trying to say is suppose we cut back like the House did; what can you visualize what we do not have in the future? I don't mean just the space station is cut back and so on, but the spinoffs and the technological events that would take place. It is still my understanding that even by a low estimate, for every $1 we spend on NASA, we get $8 or $9 back in the private sector.

Can you give me some general substance of what you think might happen in the whole area we have been talking about, not just, "OK, we didn't have the space station"?

Dr. Fletcher. Senator Garn, there are two main impacts of that magnitude. One is the direct impact on the space and aeronautics program, and I will address that in a minute. The other, of course, is the impact on the nation as a whole. You are referring to the latter.

The reason the President, I believe, has chosen to emphasize science and technology in this year's budget is that that is the foundation on which our economy can grow. The technology developed by NASA, for example, as you properly point out, at least as judged by the Apollo program, has returned to the economy something between $5 and $7 for every $1 invested.

Perhaps that is not as important. That is an economical calculation, very carefully done, not as important as the general inspiration to our young people.

I think that this nation is in serious trouble 20 years from now if we don't educate our young in the mathematical sciences and other scientific areas in the elementary and secondary schools. A report was issued about 4 years ago, "A Nation at Risk," and it described what is happening in our primary and secondary schools; that there aren't enough people going into math and science.

The space program is the most visible thing that the young folks see, the young children, boys and girls in the primary and secondary schools. I happened to be talking last Saturday to about 75 of these youngsters in about the sixth and seventh grades. When they think of science and technology, they think of space. There is a lot of enthusiasm for going into science and math.

If we don't fund the space program, they are going to say, "Hey, this country is really not worth much. We can't do what we say we ought to do."

This is, maybe, much more severe than the economic factor that I gave you earlier; although the economic factor is real, the loss of inspiration to our young folks by making a cut this large would be devastating to the youngsters of our country.

Senator GARN. We are talking about economic leadership in the world; we are talking about scientific and technological leadership; but we are talking about overall world leadership for this country in this area. I would echo what you have said. It is an interesting situation for me to be a U.S. Senator and also to have flown in space, and how I would illustrate what you are talking about is I have gone around a lot of schools, I mean dozens and dozen of schools, four last week out in Utah, and others around the country.

I have yet to be asked a single political question; nobody has asked me about Contra aid; they have not asked me about the banking bill, Glass-Stiegel, or all of that. Even when they are required to ask me some questions, as soon as they are freed up they say, "Tell us what it was like in space," over and over and over again.

I had a woman come up to me and say, "Senator, I would like you to know, in your entire 14 years in the Senate, I have never agreed with you once. You are wrong on every single issue." I said, "Gee, that is pretty severe." [Laughter.]

I said, "Not even once, you can't find one thing?" She said, "No, you are just wrong," but she said, "Could I have your autograph as an astronaut for my grandson?" I think it illustrates the point that you were making: The young people are excited about space.

You get back to the issue of whether someone like Christa McAuliffe could have flown, because we can drag out statistics of the spinoffs and whether she should have flown or not, but in my own personal experience, not being a trained teacher at all, there has been an impact on encouraging young people to take science and math and high school dropouts to come back; not just me, but I am sure Dick Truly and every astronaut, every one who has flown, has had that experience in the schools of this country. You take a Christa McAuliffe, who was a trained teacher, I don't know how you place a dollar value on that, but the incredible impact she could have had on "A Nation at Risk," as you outlined, by being able to go around this country and talk about space and use it as a carrot to encourage our young people, I can't quantify that; I can't place a dollar value on it.

I am sure you sense my frustration; it is incredible frustration at our lack of foresight, and again, we are sitting here arguing about 1 percent of the national budget in an area that has such incredible spinoffs, both tangible and intangible.

I can answer the Chairman's question, and he knows what the answer to the question is of where you find the dollars: You get a Congress that has the courage to deal with 70 percent of the budget that is off limits. He is right; when you start looking at the discretionary programs, defense and nondefense discretionary, there isn't much left.

There isn't much left in the Subcommittee for Housing and for EPA and Superfund and all of those things, and no one understands that better than I do.

But on the other hand, you have got a Congress that lets 70 percent of the budget, known as entitlements or transfer programs, go unchecked. The good former chairman of the Budget Committee knows more about that than anybody else, because he proved how gutless this Congress was last year when he proposed a 2-percent solution, a 2-percent freeze, the Domenici idea, incredible. Everybody in the country gets a 2-percent increase, but we freeze it there, and that saved, what, $70 to $80 million, Pete, something like that?

Senator DOMENICI. Billion.

Senator GARN. Yes, $70 or $80 billion. This Congress did not have the courage to say to the American people that everybody is going to get a 2-percent increase, every budget, 2 percent, but we are going to stop so we can save $70 to $80 billion. There are some of us who were willing to go for a zero freeze; the whole world stops for 1 year to save a lot more money.

No, there is a huge pool out there, a huge pool of money that this Congress won't touch that could go for science; it could go for a space station; it could go for training math and science teachers, improving education in this country, all sorts of things.

Congress is unwilling to address it, and you cannot balance the budget; you can't even significantly reduce the deficit when you are trying to make the cuts out of 30 percent of the budget and leaving 70 percent of it off limits. There are places to do this. Again, you made a very significant comment. We are asking for a one-tenth of 1 percent increase out of the total budget for the future, for the young people of this country. I apologize to the chairman. He is probably so sick of me being on my soap box that he can hardly stand it, and he is looking forward to his retirement, if for no other reason than to get rid of Jake Garn. [Laughter.]

Senator PROXMIRE. That is one reason I am not looking forward to it. Keep it up.

Senator GARN. We have spent 14 years together, and I am sure he is tired of listening to me. But I want to leave this Congress some day, like Bill is going to do, and be able to look back and say, "We have done something for the future rather than just the present." So I guess you are not going to get me off my soap box. Every chance I get, I will be on it. I am sure my time is up, and I will turn the time back to whoever the next questioner is.

Senator PROXMIRE. Senator Mikulski?

BUDGET ALLOCATIONS

Senator MIKULSKI. Thank you Mr. Chairman. As we know, when we are looking at the budget situation for this subcommittee, the key issue here will be the 302(b) allocations. While the President has made increases in the space budget, he has cut mass transit and environmental programs. Unfortunately, when we get to the 302(b)'s it will all be the same money in the same pot.

So I think our first fight will be the 302(b) battle for this subcommittee.

But, Dr. Fletcher, I have questions related to the status of two programs and then pursuing with these work force readiness issues. Could you tell us—perhaps I didn't see it in your testimony—the status of the space shuttle and do you expect a launch to occur on or about August 4? Because we know that launch capability is the keystone to everything else we are going to be doing.

Dr. FLETCHER. Senator Mikulski, we have an internal date of August 4 and, unfortunately, all our internal dates are known externally, but we say it will be launched in August. I think we are on a pretty solid ground for an August launch. We are still holding, by the way, internally, the August 4 date. What we have to do between now and August 4 is fire what we call three qualification solid rocket motors. We think that there is a very good chance that even though we make about 2000 or something measurements on each test, we think they will be successful and we, indeed, can fly in August.

Senator MIKULSKI. We know that there have been some setbacks and there has been a steady procedure to remedy problems that existed. Do you feel that a lot of the problems have been worked out?

Dr. FLETCHER. Senator Mikulski, we feel that almost all of the problems have been worked out, especially on the solid rocket motor, and we are into the qualification phase, so to speak, and that is, we have decided which changes have to be made—and Admiral Truly can correct me if I am wrong—but it is something like 160 changes made. All of these have to be checked out to be sure that we haven't made things worse rather than better, and I think we are on the track of checking them out. We call them qualification tests. So we are into the qualification period.

Senator MIKULSKI. Should the August shuttle be a successful launch, and we assume it will be, then do you expect periodic launchings after that? In other words, once we get back up, what are your plans?

Dr. FLETCHER. Senator Mikulski, we plan to launch on 2½ month centers. But that does depend on the funding for fiscal year 1989; it does depend on the people that are required, particularly at Kennedy Space Center, to do two things: One is to get the third orbiter ready to be launched in its proper turn; but also, then, to turn around the first orbiter so that it can be ready on the fourth flight.

We need people, largely, to do that, and also the appropriate funding in fiscal 1989. That is one of the points I tried to make, is that fiscal 1989 funding really does determine what flight rate we can sustain with the space shuttle.

Senator MIKULSKI. And of all of the priorities within this year's fiscal budget, the space shuttle and adequate funding for these returns would be one of your bottom line priorities; am I correct in that?

Dr. FLETCHER. Senator Mikulski, that is pretty close to accurate. All of them are high priority, but that would certainly have to be one of the highest.

Senator MIKULSKI. This would be the most basic?

Dr. FLETCHER. Yes; because we can't launch our payloads that are sitting on the ground without that flight rate.

PERSONNEL SHORTAGE

Senator MIKULSKI. Now, I would like to come back to the need for your personnel, and I understand that the fiscal 1989 budget would provide 500, more or less, new positions. There are those, particularly some of the NASA managers, that complain that 500 positions will not be enough; that really, in order for NASA to do what it needs to do, the work force needs are much more significant than that.

Could you comment on what you really need in the way of personnel so that we at least have these touchstones and benchmarks?

Dr. FLETCHER. Yes; I would be glad to answer that question, because you have hit on a crucial problem that we at NASA face. We requested an increase of 2,250 people for fiscal 1989 to the OMB. That is about how many we think we need. We have brought Dr. Noel Hinners aboard, who gave up a center director's job, which is the best job at NASA, to try to deal with our institutional problems. That is the first thing he started tackling. The bottom line of his first review was that we needed an additional 2,250 people.

We settled with OMB for about half of that, 1,225, and the way that came down was 525 now and possibly another 600 after we have once again justified the need for them. The 525 are what are needed primarily to fly off the backlog with the shuttle and ELV's and that is firm; the additional 600, we will have to argue, again, with OMB come this spring and make our case once more that we need those people for things like the core capability, scientific capability within the centers, things like being able to build parts in an emergency situation to some of our spacecraft and really restore NASA to the capability it once had about 15 years ago. That is very clear, but ultimately, we are going to have to have those 2,250 people.

Senator MIKULSKI. Does OMB have a plan for handling this personnel shortage?

Dr. FLETCHER. OMB only has a plan for fiscal year 1989. It is hard to get commitments beyond that. I can tell you what NASA's plan is: We plan to go before OMB again this spring and rejustify the need for the extra 600, which will give us half of what we need and we will come back with the other half in fiscal year 1990.

Senator MIKULSKI. One last question in this area, Doctor, and thank you for being so candid and also giving us a picture of this type. You are not only talking about your Ph.D. in the scientific field, but those people with machinist skills that you need to back up the scientists that are hands-on people at the flight centers, essentially the basic work force that backs up the scientific thinking. I think sometimes when we think of the personnel you need of recruiting almost Nobel prize winners, but what you are saying is you need the machinists, the management capability; am I correct?

Dr. FLETCHER. Yes, indeed, Senator Mikulski. We need some people to manage programs at all levels. That is the space shuttle program, but other people to actually build things. As you probably know, we build the Explorers in-house, and we actually need the technicians and the skills to build and test a lot of the Explorer programs. That is absolutely necessary to keep, I call it, NASA whole.

Senator MIKULSKI. Just one more, if I could. What does it cost to fund about 100 new positions?

Dr. FLETCHER. Mr. Campbell has the exact numbers.

What is the number, Tommy?

Mr. CAMPBELL. For the 500 positions, we estimated about $23 million for this year, so for 100, it would be a little under $10 million, probably $8 million.

Senator MIKULSKI. $8 million for 100 positions?

Mr. CAMPBELL. I'm sorry, about $4 million.

Senator MIKULSKI. $4 million for 100 positions?

Mr. CAMPBELL. Yes.

Senator MIKULSKI. So that to go to 2,200 would be a significant chunk of money?

Dr. FLETCHER. Senator Mikulski, I think it is not so much the dollars, but there is always a concern on increasing the civil service work force in government, and NASA, of course, does a lot of things in-house. That is why NASA has done so well in some of it's programs.

So it is not so much the dollars; it is the slots that go with the dollars in civil service slots. That is what we need desperately, both in fiscal 1989, and we will need some more in 1990.

SCIENTIFIC AND TECHNOLOGICAL BENEFITS

Senator MIKULSKI. Thank you.

Mr. Chairman, I know my time is up, but one of the things I would like for the record is some type of briefing memo on the scientific and technological benefits that are unique to the space station in picture terms, because we talk a lot about the space station, and I don't want to argue its merits; I want to be sure I understand its merits. We will talk about economic and technological leadership, but those are abstract concepts. I am talking about what does it mean in terms of the basic science it will generate.

Dr. FLETCHER. We can supply that for you, Senator Mikulski, or for the record.

Senator PROXMIRE. We would like to have it for the record for all of us. I think it is a fascinating question.

Dr. FLETCHER. We would be glad to do that. In fact, we would enjoy doing that.

Senator MIKULSKI. We look forward to that.

[The information follows:]

SCIENTIFIC AND TECHNOLOGICAL BENEFITS UNIQUE TO SPACE STATION

SPACE STATION: A COMMITMENT TO THE FUTURE

In mandating the development of a permanently manned Space Station, President Reagan recognized that leadership is the fundamental concept driving the need for such a facility. Clearly, sustaining U.S. leadership in space is one of the primary goals of the Space Station. Building the Space Station will enhance America's civil space endeavors, and reinforce its position as the worldwide leader in science, technology, and commerce.

The Space Station underscores the U.S. commitment to remaining a technical and economic world leader. Space Station development will promote scientific cooperation among nations, encourage technical education in an increasingly technically oriented world, spur the discovery of new technologies necessary to preserve American economic strength and growth, and provide the United States a permanent outpost in the final frontier. A commitment to Space Station symbolizes a commitment to remaining competitive in the global system. Without effective leadership, a solid intellectual base, and sufficient investment in the future (all attributes of the Space Station), the United States stands to lose its competitive edge and risks being left behind--technically as well as economically.

The economic impact of the Space Station is tangible and profound. This program will encourage American entrepreneurs to harness emerging technologies to create innovative solutions to a wide array of problems, as well as to invent new commercial products which take advantage of man's permanent presence in space. Moreover, Space Station funding provides an economic boost that ripples throughout the economy. Historically, each dollar of U.S. Government money spent on aerospace projects has generated about seven dollars worth of economic activity. Every dollar spent on Space Station substantially increases the nation's GNP and creates new jobs throughout the country, thus contributing to a more prosperous America.

The future belongs to those with the skills and knowledge necessary to meet the challenges of the 21st Century. The Space Station will help America maintain its intellectual edge for many years to come. It will stimulate research and education in a variety of academic disciplines, ranging from the sciences, engineering, and manufacturing to fields such as medicine and psychology. Once the Space Station is on orbit, the crew will be able to take advantage of the Space Station's labs, payload attachment points, and platforms to advance our understanding of the universe, make scientific breakthroughs not possible on Earth, and further the commercial potential of the space environment.

THE SPACE STATION

FOR SCIENCE AND TECHNOLOGY
- A research laboratory in space that is permanently manned

FOR SPACE EXPLORATION
- A point of departure, an enabling capability for future missions

FOR NASA
- A means in the future for activities in space

FOR THE UNITED STATES
- An essential element of civil space policy
- A symbol of our commitment to leadership in space

FOR OTHER NATIONS
- Opportunity to utilize environment of space
- Symbol of international cooperation in space

FOR MANKIND
- A first step towards living and working beyond the Earth

SPACE STATION: A KEY TO THE FUTURE

SPACE STATION PROGRAM OBJECTIVES

- Develop a permanently manned Space Station by the mid 1990's
- Provide useful and affordable capabilities
- Enhance space science and applications
- Help realize the commercial potential of space
- Secure international cooperation

- Design for evolution
- Push automation and robotics technologies
- Incorporate potential for man-tended concept in baseline program
- Blend manned and unmanned systems and capabilities

MAJOR ACCOMPLISHMENTS IN 1987

- Verified the Space Station configuration
  - — endorsed by the National Research Council
- Defined and baselined an operations concept
- Matured user requirements and conducted major analysis at the request of the House Science Committee on how science can be done at the Space Station
- Negotiated international agreements (near completion)
- Established Space Station Program Office in Reston
- Initiated preliminary design of Flight Telerobotic Servicer
- Set in place three enabling activities:
  - — Technical and Management Information System (TMIS)
  - — Software Support Environment (SSE)
  - — Program Support Contractor (PSC)
- Selected hardware contractors, and began Phase C/D development

A RESEARCH LABORATORY IN SPACE

STATION ELEMENTS

- Pressurized laboratories
- Structure for attached payloads
- Unmanned platforms

STATION ATTRIBUTES

- Permanent presence
- Interactive crew
- Repetitive access
- High level of power

DISCIPLINES ENHANCED

- Life sciences
- Materials processing
- Astrophysics
- Earth sciences
- Technology

SPACE STATION RESEARCH OPPORTUNITIES

LIFE SCIENCES

- Space Biology
- Space Medicine
- Exobiology

ASTRONOMICAL SCIENCES

- Plasma Physics
- Solar Physics
- Astrometric Observations

MATERIALS SCIENCES

- Electronic Materials
- Biotechnology
- Combustion Science
- Metal, Alloy, Glass and Ceramics Processing

EARTH SYSTEM SCIENCES

- Global Hydrology
- Global Biogeochemistry
- Climatology
- Geophysics

USER REQUIREMENTS THAT DRIVE STATION DESIGN

- Pressurized Volume
- Crew Time
- High Level of Power
- External Payload Accommodation
- Microgravity Levels
- Servicing Facilities
- Scars for Evolution

SPACE STATION PLATFORMS

- The Space Station will consist of unmanned platforms and a manned base
- Initially, platforms will be in polar orbit. Later, Station's enhanced capability configuration might include coorbiting platform
- NASA made commitment to Congress that platforms are "part and parcel" of the Space Station
- Goddard work package includes definition, development, utilization and servicing of Space Station platforms
- European Space Agency likely to develop a Station polar platform
- In January, 1988 NASA released a single Announcement of Opportunities (AO) for scientific instruments onboard polar platform and manned base's external structure
- Platforms will play key role in Space Station evolution

STATION PLATFORMS CONTRIBUTE SIGNIFICANTLY TO SPACE STATION CAPABILITIES

SPACE STATION UTILIZATION FOR A FUTURE MANNED MARS MISSION

- Precursor life science research
- Technology development
- Subsystem extended life
- Verification of space vehicle design concepts
- Space vehicle assembly and test

MUCH RESEARCH ONBOARD THE SPACE STATION MUST PRECEED ANY MANNED MISSION TO MARS

Senator MIKULSKI. Dr. Fletcher, let me just conclude. I know this will be your last hearing. I know you and Senator Proxmire have been together since the seventies, when the shuttle was getting off the ground, and it has been a pleasure to really work with both of you in this adventure. I intend to be there in August when we make sure it really gets off the ground. Thank you for your commitment to public service.

Senator PROXMIRE. Senator Domenici?

MARKETPLACE FOR SCIENCE AND TECHNOLOGY

Senator DOMENICI. Thank you, Mr. Chairman. I was going to ask Senator Garn a question about his constituency and that lady who thought he voted wrong all the time. [Laughter.]

Is that the one person in your state that votes against you? [Laughter.]

Senator GARN. There are three or four others. [Laughter.]

Senator DOMENICI. And we are not even sure, in light of your space effort, that she voted against you based on your record; she might have voted for you based upon your enthusiasm for this program.

Dr. Fletcher, let me make sure that you understand that there are many advocates in the U.S. Senate—I don't know the House well enough to make this kind of prediction about them—but there are many who are convinced that America's future is tied to her scientific prowess and to her ability to take science and do two things. First, enthuse a generation so that we can have the very best scientists, which we have always had; and second, from an economic standpoint, to turn knowledge into technology and, in turn, into products for the American marketplace.

Many of us are convinced that we can whine all we want and complain about how bad off we are and how others are taking advantage of us, but the truth of the matter is that if we lose this science and technology edge, and don't find ways to convert that into marketplace activities at a more rapid pace than we have been doing in the past, we don't have a chance in the economic arena.

We can talk all we want about our competitors and they should treat us fairly, but frankly, we either do that and do it better, or we lose out. Those that we have permitted to grow in this new industrial complex of nations that are free and capitalistic have learned a lesson, and they are doing it well.

Having said that, let me suggest that many of us are sure that we should substantially increase the National Science Foundation efforts with our universities. The President has asked that the NSF budget be doubled over the next 5 years. Many of us are convinced that the space program has to receive substantial new funding and get back on a track of accomplishment, goals, and excellence.

Many of us are convinced that we ought to proceed with substantial new money in areas of science and research. What we have, however, so that you understand our dilemma, is that within the scope of budgetary resources, we have no place to look for new money other than to reduce or cancel existing programs. From my own standpoint, I believe that there are some who are angry about that being the situation this year.

I think this is precisely what we are going to end up doing for the next decade. I see no way to dramatically increase the size of government, so sooner or later, we have to decide such things as, for example, whether we want to continue mass transit subsidies or capital improvement subsidies for mass transit in a few select cities of America?

Do we want to continue funding the Economic Development Administration or the Appalachian Regional Commission, clearly, a leftover from the Kennedy administration that serves 13 states in a very limited way?

Do we want to reform the REA program? Do you want me to continue the list? You can see the politics of special interests, and I use that word in its best sense, because there are many who are advocates of these programs and believe that they are absolutely essential to the growth of their particular part of the country.

We have to decide whether the community development block grant program is a good program or not. The president dramatically reduces it. In order to fund NASA, we are being asked to get rid of Amtrak again, for the sixth time. We are being asked to get rid of direct loans for housing in rural America.

Frankly, there are those who think that is the end of the world; they really aren't interested in listening to the fact that we have no direct lending for home ownership by the federal government except for that program. All the rest has been turned over to conventional-type financing, and we insist that we have a $2 billion program in that area even though the President says, "Let's do it another way."

The problem is that if we don't end these programs or dramatically reduce them, we can't fit within the $148 billion cap for domestic discretionary spending that is in this Summit Agreement. So many of us are going to try to reduce programs in order to increase those that we think are America's future: the space program, the National Science Foundation, or others like that. It will be difficult, I assure you.

As I understand it, the 1989 request for the space station is $967 million, and that is only one component of the request. The administration has also requested that Congress make a funding commitment of an additional $6 billion over the following 2 years. I understand what a severe setback it would be to the space program if we didn't fund that. But I am wondering if Congress is going to be able to make the outyear commitment in the absence of a final program configuration and the cost estimate.

When do you expect the President to submit the total cost estimate that you refer to in your testimony? Do you anticipate that cost estimate will be accompanied by any revisions in the scope of the space station program? Why don't we already have it? Is there some reason that you could not have had it as part of this request to put almost $1 billion of new money into the space station program?

Dr. FLETCHER. Senator Domenici. I think you are right on track when you say that it is a significant increase for space and science. I think it is also important to remind everybody that we are talking about an increase for all of space and science. You know the number better, but it is something on the order of $3 or $3.5 billion. That is the future of our country. I think somehow, the mechanics have got to be worked out so that we do that.

I am not a genius at how Congress works; you folks are the people that have to do that. But let me just answer your questions directly on the space station. Because of urging from the Congress, the President has signed up to a 3-year commitment for the space station to fund the first 3 years at a total of $6 billion. Because of the large cuts that we received in the fiscal 1988 budget, we were asked by the Congress, by this committee, actually, to reschedule and rescope the program. I think those were the terms used in our appropriations bill. We are in the process of doing that rescheduling and rescoping. I think we owe a report to this Congress sometime early in April.

Now, in addition to that, the OMB said, "Look, we want you to take another look at the management of this program, one last look." That doesn't include rescoping and rescheduling; it just includes how much we spend on hardware; how much we spend on managing and software, the TMIS program, the technical management and information system, all of that.

"We want you to come back and give us a fixed price." We know pretty well what that fixed price is going to be, but they want it to be a hard number so that we can go to Congress and not come back and ask for any more in outyears providing that you fit the funding profile.

We estimate that that fixed price will not be a heck of a lot different than what we gave you last year. It will increase some because of the cuts last year; something on the order of maybe seven-tenths of $1 billion dollars, total runout cost for development.

In addition to that, because of inflation and so forth, when you slip it a year, you have an increase of another seven-tenths of $1 billion or so for that. That is a rough estimate of what the total will be when we come back to the Congress and say, "This is our fixed price that we signed up for, for the total runout cost of development for the space station." I think the total will be something of the order of $16 billion, providing we do have the full 3-year funding for the first 3 years in the program.

HIGH RESOLUTION SOLAR OBSERVATORY

Senator DOMENICI. I also have a question regarding the High Resolution Solar Observatory. I understand that your staff has prepared a response and that the response awaits your signature. So I won't ask the question, but will submit it for the record.

Dr. FLETCHER. Yes; this is a very important program. We call it HRSO, Senator Domenici.

Senator DOMENICI. Right.

Dr. FLETCHER. It was originally planned for the space shuttle, but then we got a little crowded in terms of our manifest, and we decided it would make more sense to fit it on the space station. It is one of the candidates for later incorporation on the space station, and you will have a memo to that effect.

TECHNOLOGY UTILIZATION

Senator DOMENICI. Mr. Chairman, could I just ask one further general question?

Senator PROXMIRE. without objection, yes indeed.

Senator DOMENICI. Doctor, I am going to submit to you for your perusal an idea that a New Mexico scientist has submitted to us. It has to do with trying to develop a national program that would be modeled after the extension program of the Department of Agriculture, where the land-grant universities extend their expertise into the field to help the agricultural economy in a very precise and specific "help solve your problems" way.

This very distinguished scientist thinks that if we could combine academia, possibly the space program, and the national laboratories with some small national program of engineering assistance to small business people in the mode of an extension service, we might get a very big payback for very little additional funds by drawing on existing expertise.

I would like you to look at the proposal and see if there is some way universities, NASA, and the laboratories might fit into an engineering extension service for American small business with the goal of being meaningful to their daily needs and of bridging the gap of getting technology to the marketplace a little more rapidly. Could you do that for me and submit your ideas on the proposal?

Dr. FLETCHER. We can do that, Senator Domenici, but I think I should remind you that we have had underway for a long time, a program called technology utilization which is primarily based at universities. We have also set up centers for industrial space activity. But this has now been broadened to include all government agencies and the national laboratories are included in the Industrial Space Center, a network system.

Senator DOMENICI. I understand.

Dr. FLETCHER. Rather than elaborate on this network, we will provide that for the record, Senator Domenici.

Senator DOMENICI. I appreciate it. Thank you, Mr. Chairman.

[The information follows:]

PROPOSED ENGINEERING EXTENSION SERVICE

NASA has made significant strides along the lines suggested by the New Mexico scientist cited by Senator Domenici. Our network of 10 industrial applications centers [IAC], 8 of which are university based, constitute technology resource facilities which can provide (directly or through linkages) engineering assistance capabilities for use by small businesses and others. As primary elements of NASA's technology utilization

[TU] program, the IAC's seek to combine their wealth of automated data bases and university-based scientific and technical expertise with the technical capabilities resident in NASA field installations in ways which permit the direct application of existing science and technology to meet specific needs of business and industry.

Through the recent addition of an affiliates program, the IAC network has broadened and strengthened its linkages with state-sponsored institutions concerned with industrial and economic growth. Thirty-seven states are currently linked to make products and services available through the IAC efforts. Participation of nine additional states is under discussion.

In related efforts, the TU program is seeking to further strengthen the IAC network capabilities by establishing enhanced linkages with the more than 500 R&D laboratories in the federal laboratory consortium. Additionally, we plan this year to develop means through which the IAC network can become more readily accessible to the clients of other federal/state-supported industry assistance activities, such as the 500-plus small business development centers, economic development agency centers, and the prospective new industry centers to be established under the aegis of the National Bureau of Standards.

PREPARED STATEMENT

Senator Proxmire. I will call on Senator Leahy next, and then I understand that Senator D'Amato wanted to get something in the record.

Senator D'Amato. Mr. Chairman, I ask unanimous consent that I be permitted to submit a statement for the record as if read in its entirety, and submit one question for the record, as well.

Senator Proxmire. Without objection, it will be done.

Senator D'Amato. Thank you, Mr. Chairman.

[The statement follows:]

Prepared Statement of Senator D'Amato

Mr. Chairman, I am pleased to join you today for this hearing on the fiscal year 1989 budget for the National Aeronautics and Space Administration. I commend you for addressing NASA's role in preserving our nation's leadership in space transportation, science, applications, and technology.

For fiscal year 1989, the President is requesting approximately $11.5 billion for NASA—an increase of nearly $2.5 billion over the amount appropriated for 1988. This request is intended to support a variety of civil space activities highlighted in NASA's recently-approved national space policy.

Specifically, NASA is requesting approximately $3.8 billion for its space transportation system program. This request will permit NASA to prepare for the buildup of shuttle flight activity scheduled for 1989. In addition, it will permit NASA to begin developing an advanced solid rocket motor to enhance shuttle flight safety and to provide for increased payload delivery capability. I look forward to hearing from Dr. Fletcher about the status of the shuttle program and NASA's planned improvements in rocket motor technology.

NASA's budget request also includes $967 million for the space station. This funding commitment will allow NASA to move into full-scale development and construction of key space station facilities. I am pleased that the space station remains one of NASA's top priorities. As the President's national space policy suggests, the development of a permanently manned space station is a vital link to our nation's future in space.

Finally, I am encouraged to note that the fiscal year 1989 budget provides continued support for NASA's science and technology programs. Among the scientific missions scheduled for 1989 are the Magellan mission to Venus, the Galileo mission to Jupiter, and the launches of the cosmic background Explorer satellite and Hubble Space Telescope. Also in 1989, NASA will begin development of the AXAF [Advanced X-ray Astrophisics Facility]. This facility is intended to work with NASA's other space-based observatories to provide a complete physical picture of the universe.

Mr. Chairman, the funding request and priorities contained in NASA's fiscal year 1989 budget are intended, as Dr. Fletcher's testimony points out, to reinvigorate our nation's leadership in space. I believe we must support this effort. A strong U.S. commitment to space exploration and development will make our nation stronger and more prosperous, providing technological benefits and long-run economic opportunity.

Thank you, Mr. Chairman.

NEED FOR SPACE STATION

Senator PROXMIRE. Senator Leahy?

Senator LEAHY. Thank you, Mr. Chairman.

Dr. Fletcher, I don't know if you will miss these meetings, this being your last year, but you can look back with a lot of pride in the meetings you have had here with, probably, more committees and subcommittees than you want to think about on occasion. You may feel like you have been in Fantasia, the sorceror's apprentice in seeing these committees march by you in your sleep.

Dr. FLETCHER. Actually, it has been a pleasure, Senator Leahy.

Senator LEAHY. I want to compliment you, Mr. Chairman, for the special hearings you held last year. I had a chance to review them up at my farm in Vermont over the weekend. In those hearings, space scientists raised fundamental questions about the wisdom of the space station. I find that they asked some of the same questions I had in my mind, because I find it very difficult to understand the wisdom of a space station.

With the fact that our distinguished chairman is retiring, I wish he were not, but the fact that he is, under the normal procedures here next year, I will either be chairman or ranking member of this subcommittee, if I wish, and so that is one of the reasons why I look at it this closely.

I have a very difficult time seeing the wisdom of the space station. Dr. Sagan says once again we will have all our eggs in a poorly woven expensive basket. Dr. James Van Allen says:

> I submit that the development of a large space station during the next 10 years is grossly inappropriate to our national predicament in space and that the public mandate is for financial responsibility by the federal government.

Dr. Ricardo Gianconni, the Director of the Space Telescope Science Institute, says the Space Science Board of the NAS stated on September 9, 1983:

> The board sees no scientific need for the space station in the next 20 years.

Dr. Albert Wheeling, the chairman and CEO of Hughes Aircraft says:

> The present space station program is nothing more than a blind leap of faith. An exclusive commitment to the space station would be even more tragic than an exclusive commitment to the space shuttle.

In light of all of these serious misgivings, wouldn't it make a lot more sense to put the idea of a space station on hold until the next President, whoever he might be, has a chance to review it?

Dr. FLETCHER. Senator Leahy, in view of the fact that there is a fair likelihood that you will be the next chairman of this committee, I think it is important that you understand and fully appreciate the reason for the space station. There are always going to be detractors, particularly people that are not directly involved in the space station, that are competing for funds, and most of the folks that you mentioned are scientists competing for funds that would rather have the funds spent on their own program.

Senator LEAHY. Isn't that kind of a cavalier attitude? They raise some very real issues. We ended up with the shuttle; we put all our eggs in that basket, and it has taken the last couple of years to resolve that.

Dr. FLETCHER. I don't want to put all our eggs in the space station basket, but there are many other scientists that are strongly supportive of the space station. Those are, of course, the ones that are involved in it.

The space station, however, is more than a scientific station; it is more than a place where people can work and produce and manufacture in space. It is more than just a transportation mode; it is really the next major operation in space. We cannot go to the Moon; we cannot go back to Mars without a space station.

Those scientists, some of them, were against the Apollo program, and I think looking back on the Apollo program, that is probably the greatest thing that this country, as a nation, has produced in this century.

SPACE STATION REDESIGN

Senator LEAHY. Is there that consensus even with what the role would be? This thing seems to have been splashing back and forth over the last several years in just determining what the role will be. I have never seen anything change design as often as it has. About every year I have somebody come up and ask me what we are going to do with the space station, and every year they come up with something entirely different.

Dr. FLETCHER. To the best of my knowledge, Senator Leahy, we have only changed the configuration of the space station once since I have been involved, and only a small change before I was involved; that has been within the last 2 years.

The reason for the change during the 2 years that I have been here was that we felt, when we actually got the costs under our belt—and we are very confident about the costs now—that we ought to phase the program in two phases. The only thing we have done since I have been here is remove the upper and lower wings, which were primarily scientific in nature.

Before that, we did make some small changes, but only to accommodate greater scientific activities. We are back closer to the original configuration. But the purpose has not changed, either. The purpose has always been partly scientific, partly commercial, and also, primarily, the first or the next step in moving people out into space, particularly for testing human activities under zero gravity conditions.

Senator LEAHY. I must admit still that there is some healthy skepticism on the space station. Many feel one of the mistakes of the shuttle was we tried to use one system to accomplish many objectives, to get people into an Earth orbit; to get large payloads into Earth orbit; to launch our scientific experiments; and to launch our national security payloads. We certainly put all our eggs into that basket, and now we go out to foreign groups to launch even our military payloads, which is kind of a frightening thought.

SPACE STATION OBJECTIVES

On the space station, as I see it, there are three objectives: Test man's ability to live in space; second, research and development of commercial microprocessing in space, pharmaceuticals, very high quality crystals and so on; and third, Earth from space observation.

Couldn't an argument be made that some of these things could be done separately? One, microgravity R&D in the industrial space facility, observation of Earth and space from ELV launch facilities, and man's survivability at a much more dedicated facility.

I am told that the U.S. space policy has this sort of a basic thing: We need a clear set of goals for the space program. Back when President Kennedy was alive, he said the goal was to land humans on the Moon. Now we say, again, we need a clear set of goals for the program, but I question if the space station is a goal. It seems more like a facility, to me.

I will ask you this question. Does it make any sense to commit to nearly $1 billion next year to build a station when we are not sure just where the train is going to go?

Dr. FLETCHER. Senator Leahy, I think we are sure where the train is going to go, and that is the whole purpose of the national space policy, which indicates the ultimate goal, the long-range goal, and, by the way, two of the people that you have mentioned are strong supporters of that long-range goal and are now supporters of the space station as a means to that goal.

That is to move out beyond Earth orbit in the given presence in the solar system, either the Moon or to Mars. Both Carl Sagan and Albert Wheeling are strongly supportive of the space station for that objective. That could be done in no other way.

SCIENTIFIC PURPOSES OF SPACE STATION

If you would like, I think that we could elaborate a little bit on the scientific purposes, because we are not putting all our science eggs in that basket. Dr. Fisk would be glad to elaborate on the purposes of the space station and how it differs from the rest of our science program.

Dr. FISK. There are two disciplines in science that absolutely require the space station.

This is material processing, as we point out, and life science. These are laboratory sciences in which you need people in order to do the science. You essentially are building a laboratory in space and you are operating the equipment with people. They are scientific things that are very early in their development, and as a result, it is too early to consider extensive amounts of automation.

What you need is people playing with the equipment; putting the samples in, seeing how they work, and getting the maximum out of the experiment.

As you correctly point out, too, that part of the space station program are the polar platforms, and those polar platforms are for use in our science. That is a unique way to make global observations of the Earth. It has never been the intention that the space station is to be all things to all people in the science community, because as part of our 1989 budget, we are maintaining a very balanced space science program. The AXAF is a fiscal year 1989 new start, and it can be serviced by the space station, but the core of the observatory is not the space station. There are small missions that are particularly of interest to the universities and science community.

We also have every intention of maintaining a viable planetary program in the future which does not involve the space station, other than for eventual human exploration. We have a viable space plasma program which is conducted in orbits other than the space station's orbit. So the intention is, as is supported in the 1989 budget request, a very balanced science program which uses the station when the station is appropriate for conducting broad science, but not when the station is not the appropriate means.

Senator LEAHY. My time is up, and I will look at it in far more detail, Mr. Chairman. I am far, far, far from convinced. That is not any lack of respect to all of you, because I have a great deal of respect for you, but I, as just one Senator and only one member of this committee, I am a long way from convinced.

Mr. Chairman, thank you for the time.

Senator PROXMIRE. Thank you, Senator.

Senator Garn?

REBUTTAL FROM SENATOR GARN

Senator GARN. I will make just a brief comment of rebuttal to my good friend and colleague. I have listened to all of those gentlemen testify for a long period of time, and I don't question their scientific capabilities whatsoever.

I don't question your quoting of them, but we can dream up or conjure up a list of just as many eminent scientists, if not more, who are not involved with the program who can say they think it is a good idea, so I don't dispute that fact or what they have said.

But there are many others on the other side of the coin, as well. The major point I wish to address, Senator, is, as I look back over my years here, the Administrator, Dr. Fletcher was the Administrator when I first came to the Senate, and we had a separate Space Committee. Congress felt that space was so important that they had a separate authorizing committee.

We decided to deemphasize that to a subcommittee. I can remember when Frank Moss, the senior Senator from Utah, was the chairman, and Jim Fletcher sat in the meeting over in the other building, the Russell Building, and the chairman at the committee promised him that we would keep NASA whole for inflation. The budgets were tight, but we could absolutely guarantee we would keep NASA whole for inflation.

My point is, we have not even kept NASA close to just an inflationary increase over the 14 years that you and I have been in the Senate. Senator Leahy and I came to the Senate in the same class. We are classmates. It is easy to look back and say we have put all our eggs in one basket in the shuttle. That was not the choice of NASA. NASA would have preferred a more balanced fleet of shuttles and ELV's. Congress did not give NASA the money to make that choice. Many of these choices that we now sit back and criticize and say, "Well, you could have made the other choice and gone with the ELV's. "

Of course we could, and we wouldn't have a shuttle program and somebody would have been sitting back and saying, "You could have had a manned program. You only went ELV's." I guarantee you, if given the resources NASA would not have had, and every body agrees, and I do too, enough ELV's, and we did not have a balanced program.

That is why the eggs were in one basket. I was embarrassed that Congress did not give NASA the money to have a Halley's Comet probe and we had to go to the Soviet Union to watch what they were doing—Carl Sagan and others. Most of the choices have been imposed by Congress. If we don't like the choices, Senators, I suggest we look internally and not just blame NASA for the choice of limited resources. If we give them enough resources and they make the wrong choices, that is another story. Most of these choices going into one basket is because of that. There is a different mix and a lot of different programs they would like to go to now and not put such a large amount of resources just into a space station.

Unless given the resources to do that, to make those choices, they do not impose them. I am sorry, it is not my intent to produce a debate here between a good friend and I. But simply, we have got to look at the limited amount of resources we have given NASA and what the future is and whether we are going to shortchange the future of this country.

I'm sorry, Mr. Chairman, for taking to much time, but this is an important issue.

Senator PROXMIRE. Dr. Fletcher, the Chase Econometric Study to which you referred earlier that indicated a five- to seven-fold payoff for massive investment was indicated by the GAO comment of that study to be a gross exaggeration attributed virtually all of the technological progress the nation has made that had any connection with NASA or not to the NASA program. Isn't that the case?

Dr. FLETCHER. Mr. Chairman, three studies were made. One was by Chase Econometric, Inc.; another one was by Midwest Research Center; and the other one was by a Princeton group called Mathematics, Inc.

The numbers, I don't remember exactly, that came from Chase were something like $7 for $1, the one from Midwest Research Center were about $5 for $1, and the Mathematic, Inc. did not address the dollars out for the dollars input. They just took a piece of the program which had to do with miniaturized circuits and computers, and they estimated the value of that piece. All three of them came to about the same conclusion. I am not familiar with the GAO report, but there was an OTA report that I was familiar with that said, "These are inexact calculations and they are, as all economic projections are inexact."

I happen to have spent some time in the economics department at the University of Pittsburgh. But they are the best we can do. Whether it is $5 or whether it is $7 or whether it is $3, it is still a large return for the amount that is invested.

Senator PROXMIRE. There was a GAO study, and I will be happy to make it available to you. Then the second point is that you and the distinguished Senator from Utah keep saying it is only 1 percent of a $1 trillion dollar budget. It is $8.9 billion on its way to over $11 billion, and it is true that is about 1 percent. But the $11 billion or $9 billion is a whale of a lot of money; we can't ignore it. It constitutes 30 percent of the discretionary outlay in this subcommittee. So we have to work on it from that standpoint.

From the standpoint of looking to nondiscretionary spending, particularly social security, that is a program that has a dedicated tax; you can only use the money only for benefits to social security recipients. It is running a $38 billion surplus. It will run a $10 trillion surplus by the year 2020.

To say under those circumstances that the meager payment to social security recipients, which averages around $500 a month, which means those who rely on social security, primarily—and millions of people do—those people are living below the poverty line. To say we have to cut it further than that by not giving them a full COLA seems to me to be something many people, the majority, so far, the Congress in both the House and the Senate, feel we shouldn't do.

So it is hard for me to understand how we can say under these circumstances that we just look to the discretionary program, make cuts over there.

DISTRIBUTION BY INSTALLATION

Dr. Fletcher, in looking at your justification for the space station, I see a dramatic shift in the distribution of program dollars by installation.

Last year's justification indicated that about 11 percent of your 1988 space station dollars would go to headquarters, while 27 percent, to take one Senator's budget, would go to Marshall. As you well know, we cut your 1988 space station request by about 45 percent, but the percentage of that reduced budget going to headquarters jumped from 11 percent to 26 percent, while the percentage going to Marshall fell from 27 percent to 13 percent.

Why did that happen?

Dr. FLETCHER. Mr. Chairman, there are two phenomenon at work there. One, of course, the percentage at headquarters jumps up when you cut the program back, because what you do is you cut back the hardware programs which are being operated out of there.

Senator PROXMIRE. That is the point. If you have to cut that back, why can't you cut headquarter's back?

Dr. FLETCHER. Because the hardware program had not started. Remember, those were the work packages that we discussed earlier. It is much easier not to start something than it is to cut back on something. It always costs you a lot of money to cut back on something. So, basically, that is simply a redistribution of funds as a result of the cutback.

The other factor is that we had to have the management instruction. For example, we had to have the architecture put together for the whole system before we started work on the hardware development, and that, plus the software development, these are all long leadtime items. It was decided that it would be unwise to cut back on the so-called nonprime contractors, the nonhardware contractors.

SYSTEM'S SUPPORT CONTRACTOR

Senator PROXMIRE. Let me then follow up with this. I am especially surprised that despite the 44 percent in 1988 funding, the 1988 budget for headquarters also increased in absolute dollars from an initial figure of $91 million last year to a $112 million final figure this year. To put it another way, the station budget was cut 45 percent, but your headquarters station budget went up by 23 percent.

I hope that doesn't indicate a tendency to fund the administrative bureaucracy at the expense of the lined programs. Can you explain that increase in your headquarters budget in the face of a cut in your total space station program?

Dr. FLETCHER. Yes, indeed, Mr. Chairman. This is simply due to inertia. Remember, the cut in the space station budget was done at the end of the calendar year, about December, and we had already begun to ramp up the expenditures for the headquarters management which we call the systems support contractor.

It just didn't make sense to have just ramped up that program and then turn around the next month, in January, and cut it back. We have leveled it off; we have not increased since the December cutback, but you can't increase and decrease 1 month at a time. There is always a little bit of inertia. In fact, we put a freeze on the hiring of that contractor, and also headquarters' personnel immediately after we saw what had happened in the Congress.

SPACE STATION RESCOPING RESCHEDULING PLAN

Senator PROXMIRE. As you know, the conference report on the 1988 appropriations bill called on NASA:

To provide the Committees on Appropriations a detailed plan rescoping and rescheduling the space station activities consistent with the 1988 and 1989 budget cuts.

Although we asked for that report by February 29, we agreed to give you until early April to work out the details. Will that report be forthcoming in early April?

Dr. FLETCHER. Yes, Mr. Chairman. As a matter of fact, just as a matter of interest, the main effort for that report is by those headquarters contractors that you indicated should be cut back.

MAN-TENDED CAPABILITY

Senator PROXMIRE. In your letter of February 18, you indicated that Mr. Stofan and Mr. Moser believed that you could advance the space station's man-tended capability milestone by altering the launch and assembly sequence and that that was now your intent, although you must first make a technical assessment in order to fully understand the impact of any such program change.

Has that technical assessment been made and, if so, do you have more confidence in NASA's ability to accelerate the man-tended capability milestone?

Dr. FLETCHER. Mr. Chairman, that is a good question. We are looking very intensively at that whole question. We will have a report the first week in April, as we promised.

However, I think it is important to note that one of the ingredients of being able to get that early man-tended capability is that we have funded an advanced solid rocket motor program, because that gives the shuttle the opportunity to lift up larger payloads, something like a 20,000-pound increase.

When we put this together, make the assumption in order to get that man-tended capability earlier, that we, indeed, have funded an available advanced solid rocket motor.

TECHNICAL MANAGEMENT INFORMATION SYSTEM [TMIS]

Senator PROXMIRE. As I understand it, you plan to spend $29 million in fiscal 1988 on a space station technical and management information system that will cost a total of $1.8 billion; is that correct?

Dr. FLETCHER. I think that is correct.

Frank?

Mr. CAMPBELL. That is too high.

Dr. FLETCHER. Frank Martin will give you the correct answer, Mr. Chairman.

Dr. MARTIN. I may need a little help on this, too. I think over a period of 8 to 10 years, I think the team operates at a funding of about $40 million a year. So over 10 years that would be about $400 million.

Mr. CAMPBELL. About $350 million.

Dr. MARTIN. $350 is the number that we have.

Senator PROXMIRE. That is quite a difference. I am glad to get that correction. $400 million compared to $1.8 billion. You have made quite a savings right there.

According to a report the General Accounting Office provided to Congressman Nelson on March 8, NASA initially allocated $36 million for TMIS, the technical management information system, including $27.4 million for development and $8.8 million for operation.

I assume this budget includes dollars carried over from your 1987 appropriation; is that correct?

Dr. FLETCHER. That is correct, Mr. Chairman.

Senator PROXMIRE. The GAO indicates that your TMIS Project Manager estimates you will run out of money by the end of March. Is that the case? If so, why are the funds being expended so quickly?

Dr. FLETCHER. I don't believe the funding profile is any different than we had originally planned a year ago. I think we are simply spending the money not quite at the rate that we planned, but at a slightly lower rate, I think 15 percent less.

Mr. Campbell, do you have the exact numbers?

Mr. CAMPBELL. As of this month, we still have available $6 million, and we are prepared to obligate another $3 million. I am not clear on the basis for that conclusion by the GAO.

Senator PROXMIRE. I am reading from the GAO report dated March 8, which says the NASA TMIS Project Manager asked him. Maybe they asked your Office. Are you the Project Manager ?

Dr. FLETCHER. No; Mr. Campbell is the Comptroller.

Senator PROXMIRE. They estimate NASA will have spent the $36.2 million by the end of March 1988.

Dr. FLETCHER. We will provide more precise information for the record, Mr. Chairman, but I think that is not quite accurate, according to our Comptroller.

[The information follows:]

Cost of TMIS Development Activities

NASA is estimating the total contract cost for the development and the maintenance and operation (M&O) of the Technical and Management Information System to be $340 million. Of this amount, $24 million was funded in FY 1987 with Definition phase resources. The Development budget estimate of $316 million covers all TMIS contract activities for development and M&O through the first element launch. (Operations activities will be funded within the Space Station Operations budget element.)

From contract inception in mid-1987 through March 31, 1988, costs incurred on the TMIS contract have amounted to $34.4 million. The March 1988 monthly cost rate was $1.7 million. Based on the release of residual FY 1987 development funds to NASA, the allocation of the available FY 1988 funds will permit continuation of contract funding through May 1988. Release of the remainder of FY 1988 funds after June 1, 1988, will cover the TMIS contract requirements through the balance of FY 1988.

TMIS First Increment Completion

Prior to the relocation of the Level 2 program office to Reston, VA, the contract schedule called for completion of the first increment of TMIS--known as IOC'--by February 1988. The transfer of the program office to Reston and the preparation of the computer facility readiness at that location has delayed completion of that milestone to June 1988. This is consistent with the plan for the first increment to require approximately 12 months after contract start. (In early 1987, it was planned to initiate contract activities in April 1987 and complete IOC' in April 1988; actual contract start date was in June 1987.) The planned cost for completion of the activities planned for IOC' was $36.2 million, a target established in early 1987. As we near completion of this phase, this estimate is still valid.

Change in TMIS Planning

As noted above, the request for proposals for the TMIS contract envisioned a core capability at the JSC level 2 (B) program office, with a total of ten sites being supported at various geographical locations. Consistent with the transfer of the Level 2 function to a then-undetermined site, the number of sites was increased to eleven and an interim solution for the central data base and computing facilities was required. This interim solution enabled the support to users to be maintained, even though the final readiness of functions tied to the completion of the Reston facility had to be deferred. This accommodation was achieved with no increases in the overall TMIS budget.

Senator PROXMIRE. GAO's reading of the TMIS contract indicates that hardware and software for the first increment should have been designed, should have been tested and made fully operational at all 10 NASA user installations by February of this year, but this milestone will not be reached until June 1988. Is that correct, and if so, what is causing the delay?

Dr. FLETCHER. Frank, do you want to answer that?

Dr. MARTIN. Yes. The primary cause of the delay in the implementation of the TMIS is driven by the availability of our Reston facility. We moved the lead responsibility teams from JSC to level II in Reston. The facility was not available to us, so we have had to delay the time that we would actually have those things in place.

The testing question is one of whether or not we would test the total system or at the subsystem level. The review that GAO had into our plans was that we would test all of the software subsystems and elements.

It turns out we are using a lot of off-the-shelf commercially available software that just doesn't need to be tested. So we have updated our plans and we are testing at the total system level.

We had an outside review committee that reported to Dr. Fletcher in early March on the status of the program. We got very positive supportive comments from that group. That TMIS was under control and well within the scope of both the cost and content that we have there.

The basic thing is later than we had hoped to have last year when we put this budget together, but we will have it up and operating in June, and it won't cost additional dollars.

Senator PROXMIRE. Senator Garn?

RESEARCH AND TECHNOLOGY PROGRAM

Senator GARN. Thank you, Mr. Chairman.

Dr. Fletcher, there is one disappointing thing to me in your testimony. The reason I bring this up is because this is the National Aeronautics and Space Administration, and we tend to always talk about space, and we ignore the "A," the aeronautics. I want people to more fully understand what we are getting for NASA's budget.

There is only one paragraph in this area:

> In fiscal year 1989, the Aeronautics Research and Technology Program is committed to developing the technology basis for improving the nation's competitiveness and clear-cut product superiority in the international marketplace, enhancing the safety of aviation, and increasing the margin of the country's preeminence in aviation for national security. Technologies are being pursued that offer the potential of a major increase in aircraft capabilities and a substantial positive impact on U.S. competitiveness. Research efforts have been expanded and composite materials, advanced-propulsion in aviation safety.

That is a nice paragraph, but I would request that you send to the subcommittee for part of the record a much expanded version of what we do in aeronautics, because there isn't a day that goes by when we are not reading about aviation safety and what the FAA has to do.

We still read about fuel shortages, and nobody knows the supercritical wings and high bypass engines and all of that sort of thing came from NASA. So we need to bring this discussion a little bit back to Earth too, in areas that are of critical value to this country and everybody that flies in a commercial airliner, and we are looking at the competition with the European agency, the airbus, and all of that. We always used to be preeminent, overwhelmingly, in commercial aviation, and we are starting to lose that.

So here is another area I wish you would expand on so my colleagues would understand what the first "A" in National Aeronautics and Space Administration and start to recognize the benefits that we receive from this budget.

Dr. FLETCHER. Senator Garn, I would be glad to supply that for the record, and I apologize for the abbreviated treatment, but actually, there is a substantial increase in several areas for aeronautics.

[The information follows:]

NASA'S CONTRIBUTIONS TO AERONAUTICS

Aeronautics has been important to the U.S. ever since the Wright brothers first flew at Kitty Hawk. This importance was recognized with the formation, in 1915, of the National Advisory Committee on Aeronautics (NACA), which was chartered to "direct and conduct research and experiment in aeronautics." The research that NACA conducted was vital to the emerging U.S. aviation industry and the National defense then, and it remains vital to our continued preeminence in aviation today.

The United States has long been the world leader in aviation. Our aeronautical products provide the largest positive contribution to our country's trade balance, and our military aircraft are superior in performance and reliability. But, our leadership is being challenged today as never before. Our share of important worldwide aviation markets has been declining over the past several years. Foreign competition has strengthened while the demand for aviation products has grown, making it increasingly difficult for the United States to maintain dominance in aviation.

The importance of NASA's contributions to the aviation industry has again been recognized with the recent announcement that the prestigious Collier Trophy has been awarded to the NASA Lewis Research Center and the NASA/Industry Advanced Turboprop Team.

This award is in recognition of NASA's efforts in developing advanced turboprop propulsion technologies. This superior technology enhancement of the propeller has surpassed the jet engine for new fuel-efficient subsonic aircraft. This success points out the payoffs of a strong research and technology program in emerging technologies. This story demonstrates how our research and technology can lead to superior aeronautical products to keep the Nation's industries competitive in the world economy.

Another aeronautical success that NASA is proud of is the tiltrotor. This concept, which combines the best features of the helicopter with those of the airplane, was first explored by NASA in the fifties. With DoD and industry as partners, technologies were developed over a twenty-year period of cooperation, and the highly successful XV-15 tiltrotor research aircraft proved the concept. Now, the U.S. military services are developing a tiltrotor aircraft, the V-22 Osprey, for introduction in the 1990's, and government and industry are cooperating to investigate the exciting possibilities of integrating a civil tiltrotor into the national transportation system.

Yet another area which has revolutionized the aeronautics industry is computational fluid dynamics (CFD). This discipline continues to advance at a rapid rate. Numerical simulation techniques have been applied to some of the most complex problems in aeronautics, such as: high angle-of-attack flows around fighters, hypersonic aircraft, turbulence modeling, and engine internal flows. An example of a recent spectacular breakthrough in CFD is the work of NASA Ames researcher, Man Mohan Rai, which was recently done utilizing the NAS. His modeling of the three dimensional, viscous gas flow through the rotors and stators inside a turbine engine is the first ever detailed flow visualization of the interactions inside rotating turbomachinery, and has resulted in an order of magnitude jump in our ability to analyze and predict engine aerodynamics.

The NASA FY 1989 Aeronautics Research and Technology budget request of $414.2M supports a program carefully constructed to strengthen U.S. leadership in aeronautics. This budget provides for a foundation of advanced technology which our industry can use to maintain its competitive posture in global aviation markets.

NASA has a pivotal role in providing the leadership to maintain the superior technology base in the aeronautical disciplines necessary to meet these challenges. Over the last few years, in cooperation with industry, we have conducted intensive studies to determine which research should be undertaken to ensure continued aeronautics leadership. This has resulted in an aeronautics strategy with three important elements:

(1) to emphasize emerging technologies offering the potential for major advances;

(2) to strengthen technology validation in selective high-payoff areas; and

(3) to assure the health and productivity of our unique laboratories and facilities.

In line with our first strategy element, increased funding in our R&T Base program is requested in the areas of advanced propulsion concepts, and human factors related to aircraft automation and safety. Our Systems Technology request includes an augmentation for research in advanced composite materials for innovative aircraft structures.

In the FY 1989 budget request, NASA has planned a research program in advanced composite materials to capitalize on the enormous potential of composite structures, where emerging technologies will enable entirely new materials, and innovative structures applications. Promising candidates include: tougher resin/fiber composites, new thermosets, and advanced thermo-plastics. To take advantage of this technology, we will also develop low cost fabrication and construction methods. Advanced design methods will be evaluated with small-scale components and test specimens to provide the confidence to apply this technology to primary aircraft structures.

A second area of augmentation requested for FY 1989 is for advanced propulsion concepts research. Propulsion has historically been the enabling technology for the major advances in aviation. This research will provide the high leverage technology leading to advanced propulsion concepts for subsonic and supersonic aircraft. The program has four elements:

- High efficiency core components, in which, for example, very small radial turbomachinery has the potential to provide a

25 percent improvement in thermal efficiency for subsonic transports.

- High through-flow turbomachinery, such as supersonic fans, to reduce the high penalties associated with current generation engine inlets, resulting in a 20 percent improvement in supersonic cruise range.

- Variable geometry components, such as mixed-flow inlets and multi-stream nozzles, which enable efficient operation at both subsonic and supersonic speeds.

- Air turboramjet cycle, where novel component technologies may enable single propulsion systems that can operate at all speeds up to Mach 6.

The third area requested for augmentation is aviation safety. With the steadily rising volume of air traffic into our ever more crowded airports, the margin for error in piloting and controlling airliners is diminishing. The number of accidents attributable to crew error remains constant at about 65% despite sophisticated avionics designed to provide information to the crew.

This source of error can be decreased through understanding the behavior of humans in current and future aircraft and airspace systems. By developing the technology to design systems which optimally integrate the human and automated systems, we can provide for improved error tolerance, and hence improved safety, and increase the capacity of the airspace system.

In the second strategy element which addresses technology validation, small-scale validation typically occurs throughout the research and development cycle, and is included as part of the programs planned to be augmented in FY 1989. Large-scale and flight validation, however, will continue in the ongoing program in limited, selected areas.

Our third strategy element, assuring the health and productivity of our key facilities, has been addressed through the development of a five-year Major Wind Tunnel Revitalization Program. The principal elements of this program are embodied in NASA's FY 1989 Construction of Facilities budget. In addition, specific data acquisition equipment and instrumentation upgrades are being supported in the Research and Technology Base.

The NACA/NASA wind tunnels were built to provide national research and testing facilities to support aeronautical development for both civil and military uses. The wind tunnels are critical to the development of advanced technology, and provide a unique capability necessary for new aircraft designs. The average age of the major NASA wind tunnels is 33.2 years; and the average age since major rehabilitation is 19.3 years. Based on the results of a comprehensive assessment of NASA's wind tunnels by a special task team, this much needed revitalization program has been initiated to ensure the reliability and productivity of these critical test facilities. This 5-year revitalization program includes the rehabilitation and upgrade of the 19 major wind tunnels that are a unique set of national facilities upon which industry and the military depend on for the development of all of their new aircraft, as well as being essential to NASA's research programs.

These key elements of our FY 1989 Aeronautics Program provide an integrated framework upon which the American aerospace industry can build to maintain preeminence in aviation.

In summary, the ongoing NASA Aeronautics R&T Program is vigorous and productive. We conduct pioneering research in emerging technologies, selectively conduct the highest payoff systems technology validation, and produce results that industry uses. Our recent successes, exemplified by winning the Collier Trophy, are major factors in our country's aeronautical leadership.

The FY 1989 budget request continues our strong aeronautics program with its focus on emerging technologies and selected systems technology validation. We are committed to revitalizing our major wind tunnels to ensure the reliability and productivity of these critical national assets. Our research and facilities will provide the industry with the technology needed to develop entirely new systems or major improvements to existing ones. This validated technology base is the foundation that will allow our aerospace industry to compete successfully in future aviation markets.

WIND TUNNEL RESEARCH

Dr. FLETCHER. Perhaps the most important is the remodernization of our wind tunnels, and that appears in the CofF budget. I think there is a large increase in the facilities budget, primarily for the start of the upgrading of our nation's wind tunnels. As you say, a lot of the aeronautics improvement, both for commercial and military aircraft, came out of that wind tunnel research.

In addition to that, though, we have a thrust in the direction of revisiting the supersonic transport capability, particularly the items that we dealt with back in the seventies, Mr. Chairman, having to do with the noise and the pollution problems that might be caused by a potential supersonic transport; also, there is a small initiative in the area of continuing the modernization of our current subsonic commercial aircraft.

AIRCRAFT ENERGY EFFICIENCY PROGRAM

We had a program back when I was with NASA the first time called the Aircraft Energy Efficiency Program, which had an enormous impact on both military and commercial aircraft.

This had to do with the winglets that you now see on most small aircraft; it had to do with the supercritical wing, as you mentioned; it had to do with upgrading the engines for a higher bypass ratio.

All of these things now have appeared on both military and commercial aircraft, not only in this country, but, I'm sorry to say, the rest of the world, as well.

That program will be revisited because it looks as though modernization of a subsonic aircraft is just as important now as it was 10 years ago. So we have a substantial aeronautics program, and it is a substantial increase for fiscal 1989.

Senator GARN. If you start trying to quantify that in terms of the incredible fuel savings as a result of those changes in commercial aircraft, they are not attributed to NASA, but they should be, and what it has done in the energy crisis that we had in lieu of the 757, the 767, and those types of engines, pollution control, noise abatement, all across the board.

It is an enormous amount of money that is being accrued every day in the civilian private sector as a result of those research dollars. That is why I made the point that there is one little paragraph about this, and people just don't understand what comes out of this 1 percent of the total budget.

GLOBAL CLIMATE CHANGE

There is another area I would like to explore with you which is of high visibility right now, and that is global climate changes. There isn't a day that goes by that we don't hear about ozone or the depletion of the ozone, and I doubt very much if most people are aware of NASA's role in cooperation with other agencies and the National Science Foundation, particularly, down at Antarctica, the South Pole, in that particular area.

In 1986, the International Council of Scientific Unions endorsed plans for an International Geosphere Biosphere Program [IGBP] to begin in 1992 and last for 10 years. I quote:

> The IGBP would be designed to describe and understand the interactive physical, chemical, and biological processes that regulate the total Earth's system, unique environment it provides for life, the changes that are occurring in that system, and the manner by which these changes are influenced by human actions.

The U.S. National Academy of Science is involved in extensive planning. The U.S. Global Change Program, which is the title given to the activities, will become the U.S. contribution to the IGBP.

SPACE STATION ROLE IN IGBP

Here is another thing that is of high visibility; we are talking about the total global changes of weather; life here on Earth; how it survives. We are going to play a major role in that effort. I am sure you are not prepared to answer in full today, but I would appreciate further response on what NASA's part will be in that IGBP and specifically, what part the space station will play in those Earth observations of our global climate changes and other environmental concerns.

In other words, what I am trying to illustrate, and my great frustration as we argue about the nuts and bolts, is some of the basic things we deal with on the face of this Earth, the continuation of human life, are coming out of science and what we are trying to do in that 10-year period to find out what happens if that ozone layer does deplete and what we can do about it and many other environmental changes.

We are back to what is coming out of 1 percent of the total national budget. Everybody is excited about it. There is an article every day, and concerned scientists of the world are tearing their hair out. How are we going to get this message out about what we are trying to accomplish?

I would appreciate a more detailed answer to that question, as well, and our part in trying to solve these types of problems.

Dr. FLETCHER. Senator Garn, I would be glad to do that, but I would like to remind those present that the space station also plays a major role in that IGBP. The polar platform, which is part of the space station, is almost entirely devoted to what we call Earth observation science, which is part of the IGBP program, and NASA, of course, has a major role in that whole IGBP, as indicated by the ICSU.

In fact, we actually started that initiative with the Academy of Sciences along with the National Science Foundation and NOAA.

[The information follows:]

GLOBAL CHANGE, THE EARTH OBSERVING SYSTEM, THE SPACE STATION POLAR PLATFORMS, AND THE INTERNATIONAL GEOSPHERE BIOSPHERE PROGRAM

The International Geosphere-Biosphere Program is being formulated by the International Council of Scientific Unions as a worldwide study of global change. The key to this effort will be new global observations of the Earth from space.

Near-term IGBP Contributions

Several elements of the OSSA Earth Science and Applications Division are directly related to NASA's evolving role supporting the International Geosphere-Biosphere Program (IGBP) and the Global Change initiatives. First, the Upper Atmosphere Research Satellite (UARS) Program, scheduled for STS launch in 1991, will provide understanding of the key radiative, chemical and dynamical processes which couple together to control the composition and structure of the stratosphere. The UARS mission will provide the first integrated global measurements of: ozone concentration; chemical species that affect ozone; energy inputs; temperature; and winds in the stratosphere and mesosphere. These measurements will provide the first full data set on stratospheric composition and dynamics which will be required when very difficult decisions must be made in the future regarding production of chlorofluorocarbons. Second, the Ocean Topography Experiment (TOPEX) will utilize satellite radar altimetry to measure the surface topography of the global oceans over a period of three years with sufficient accuracy and precision to significantly enhance our understanding of the oceans' general circulation and its mesoscale variability. Such information is needed to better understand how the atmosphere drives the circulation of the oceans, how the oceans in turn influence the atmosphere and ultimately, the role of the oceans in climate determination of the three-dimensional current structure of the global oceans. When further combined with in situ observations and ocean surface winds data from the third program element, the NASA Scatterometer (NSCAT), unique measurements of the oceans' driving force (winds) and the resulting ocean response (topography) will have been obtained, permitting the first global study of the influence of winds on ocean circulation, on the effects of the oceans on the atmosphere, and on improved marine forecasting (winds and waves).

Earth Observing System (Eos) and Space Station

NASA and the scientific community have formulated plans for Eos to provide the needed atmosphere-geosphere-biosphere measurements. Eos will be a joint effort of the U.S., Japan, Europe (through the European Space Agency), and other countries. An Announcement of Opportunity (AO) is currently open for Eos, and separate announcements are open from the parallel international development groups. The observations require several polar-orbiting spacecraft ("platforms"), each carrying an integrated set of research and operational instruments designed to study the Earth as a system. The Space Station Polar Platform is being built to meet this need on a long-term basis. In addition, several atmospheric sounding instruments are planned as attached payloads to be deployed in the early phases of the manned-base Space Station. These payloads are intended to maximize data return from the more equatorial inclination of the Station, and are included in the above mentioned AO. With the development of these payloads and facilities, we are poised to dramatically increase our ability to address the profound environmental questions before us. The funds needed to initiate development of these payloads are included in the FY 1989 budget request.

Global Change

The Earth System Science Committee (ESSC) of the NASA Advisory Council has recently identified Eos as the centerpiece implementation strategy to address IGBP requirements and the Global Change initiative. The Eos is the main new program contribution to the U.S. Global Change effort and, in turn, to the U.S. contribution to IGBP. We are currently involved in interagency cross-cutting exercises to identify budgetary elements which support the Global Change effort. It is clear that the entire Earth observation program is related to the Global Change goals; however, the only Global Change specific elements which we can currently identify is the Advanced Technology Development money for Eos.

Data and Information System

NASA has begun development of another crucial element, necessary to coordinate and implement the success of all of the above plans. That element is the development of an integrated data and information system for Eos and any extensions of Eos to further research programs. The Earth science research and applications community has identified this development of an integrated data and information system as its number one requirement for an effective program to study Global Change. This system must:

1. Contain all the data and information relevant to the study of Global Change including analyzed, value-added, and model assimilated data and model results;
2. Provide systematic quality control of the data and information included in the system and document this quality control process;
3. Provide the user with a single source for access to the data;
4. Deliver data and information to users in a timely fashion;
5. Provide data at the lowest possible cost to encourage its full use in global change research;
6. Permit users to preview the data before it is ordered;
7. Be maintained on a long-term basis commensurate with the time needed to study global change;
8. Be capable of evolution as our understanding, requirements, and abilities change and grow.

EARTH FIRST TO BE EXPLORED

Senator GARN. Let me just conclude with one comment along that line. The very first press conference that my crew held after our return from our mission, Col. Beau Bobko was asked a question, and the question was: "What will be the first planet that we will explore from space?" Beau said, "The Earth, of course."

I don't think most people realize that; that we have learned more about our Earth and its surface from oceanography to volcanography; you name it; from lower Earth orbit from space than we have roaming around the surface of it. That is another aspect that we simply need to understand about why we need a space station; why we need shuttles; why we need ELV's: To learn more about our own Earth and the future of the environment and human life on this planet.

Thank you, Mr. Chairman.

PLANETARY DATA SYSTEM

Senator PROXMIRE. Following up on that question, Dr. Fletcher, your justifications indicate that a portion of your planetary exploration research and analysis budget will be spent on the continued development of a planetary data system to archive all planetary data for enhanced accessibility for all users.

Can you tell us how much you plan to spend in the activity in 1989 as compared with your current budget? We would also like to know when the data system will be operative.

Dr. FLETCHER. Dr. Fisk will answer that one.

Dr. FISK. It is the planetary data system that we are working on; there are several aspects to it. One is a coordinated data system which allows us to operate, in a most efficient way, all of the planetary missions which are to be launched in the next few years. That includes the Galileo missions. the Magellan mission in 1989, followed eventually by the Mars Observer, and, hopefully, missions in the future such as CRAF and Cassini.

That will be operated at JPL, and it will support the upcoming missions as well as missions which are currently being tracked such as the Voyager mission with the Neptune encounter coming up in 1989.

Senator PROXMIRE. Let me follow up on this. An article appeared in the Wall Street Journal last January that was highly critical of the way in which data from past planetary missions was being archived.

Let me quote two passages from the article:

> The United States has spent billions on space exploration the past two decades, searching out the secrets of the Moon and Venus, of Mars, Jupiter, and Saturn and galaxies beyond. But the little-known secret is that scientists have looked at only 10 percent of the data that spacecraft have sent back to Earth. They have closely analyzed only 1 percent of the mountain of tape.
>
> The space agency isn't even sure how many tapes it has: over 60 percent haven't even been located or catalogued.

It turns out action could have been taken perhaps a decade sooner. The hole in the ozone which appears every spring in Antarctica showed up 10 years ago in raw data from the Nimba 7 satellite, yet no one ever sifted it out of the tangle of tape.

Is that a fair criticism?

Dr. Fisk. No, sir; I don't think it is a fair criticism.

Let me comment a bit from personal experience, and bear in mind that I have been here a year, and prior to that I was a working scientist, including the analysis of data from NASA missions. All of the data coming back from NASA missions is carefully screened in order to find the most revealing events to study.

We are frequently up observing, continuously, but what we are really interested in doing is understanding the physics of the phenomena that we observe.

So what the principal investigators do when they receive the data is go through it, and they choose those events on which to do detailed analysis in order to provide the most revealing physical analysis of what they are trying to study. I think a correct measure of how successful we are being on that is the number of publications that come out, because that is really the measure of what you are putting out in terms of information.

Missions such as IRAS has published more than 700 papers in the reference journals; missions such as the IUE, the International Ultraviolet Explorer, more than 1,000 papers, and planetary missions do the same.

Having gone through the initial screening of the data, then the data is, in fact, put in storage and archived. You do that for two reasons. One is when you go through and find events later in the data, you are sometimes curious as to whether those events occurred earlier, and then you go back, and you screen the data one more time with a better understanding of what you are looking for the second time through. That was certainly the case for the ozone hole.

The data was all correctly archived and could be found. The first time through the hole was not something that was noticed in the data. When the hole was, in fact, discovered, then it was possible to go back through the archive data to find out how long it had occurred, the magnitude of its occurrence in previous years.

I think we are doing a very good job, actually, in analyzing the existing data. We have some interesting challenges however, in our future. The data that NASA will be receiving over the next few years is going to grow dramatically, particularly in the Earth science area and the Earth observing system that was mentioned by Senator Garn and Dr. Fletcher, from the instruments that will fly on the polar platform. They will produce untold amounts of data, but we have a very active effort underway to make use of that data, to prepare ourselves to be able to handle it, distribute it, and archive it. I think we are ahead of the power curve on that.

Senator Proxmire. If you would like to give us a little more for the record, not in oral response, but for the record on what you are doing with it, there is no question you are producing an enormous amount of data. The challenge here is whether or not that data is being organized and used properly.

[The information follows:]

DATA MANAGEMENT, ARCHIVING, AND DISTRIBUTION

NASA has a number of on-going efforts in the application of advanced information systems technology to improve the effectiveness and efficiency of data management, archiving, and distribution functions available to our general scientific community. For example, directories and catalogues of data holdings and archival locations, along with actual data for frequently requested datasets are now available on-line and accessible to the science community through a widely distributed electronic network. Use of advanced storage technologies such as optical media have been exploited to both restore aging datasets and improve overall reliability and cost-effectiveness.

In addition, discipline data systems such as the NASA Oceans Data System and the NASA Climate Data System have been designed and developed to meet the specific needs of particular research communities, with master directories and catalogues for the physically distributed archived nodes coordinated through the National Space Science Data Center. We are also upgrading on a continuing basis our institutional facilities including large-scale computational power, applications tools, and network interconnections to ensure that adequate support is available for the analysis and scientific discovery process once the data is acquired.

As we point toward the future and the Space Station era, science data and information systems will play an even more critical role in meeting our science objectives. To meet the needs of the extremely high volume and long time series datasets associated with science missions over the next decade, significant technology advances are needed in the handling of massive datasets, access and distribution technologies, data compression techniques, visualization, and other related areas. A Center of Excellence in Space Data and Information Sciences composed of a consortium of universities, industries, and government agencies has been recently established to focus research attention on these problems.

NASA's overall approach and the life cycle cost estimates to meet the data handling requirements through the year 2000 are contained in a report recently submitted to Senator Proxmire.

The Earth Observing System (Eos) is one of the major drivers for future data management and archiving requirements and, as such, a more detailed description of the data system plans for that mission will provide even further insight into the overall NASA approach.

The potential flow of raw data that will be acquired by Eos in the 1990s is about 1 Terabyte (1012 bytes) per day This huge data stream will be converted into useful information by the Eos Data and Information System (EosDIS) for scientific analysis using the following approach:

- Processing of the data to at least geophysical level will take place within 72 hours of collection.

- Processing of data to geophysical level will be performed at active archive sites dedicated to a particular instrument or group of instruments, which will process, provide access to, and archive Eos data for limited time periods.
- Permanent archives including those of other agencies will receive these data from Eos active archives, and provide long-term access to the data by all investigators.
- A communications network will connect the various distributed elements of the Eos data and information system to the research community, including links to other agencies and international organizations.

We have gained experience in many of the concepts described above through the science discipline-based pilot data systems of the 1980s. We believe that the distributed architecture planned for the Eos data and information system will provide an operational system maximally responsive to the investigative, interactive nature of scientific inquiry, and robust enough to sustain the user needs through the very long life anticipated for the program. The overall data system will be developed in an incremental fashion making use of a testbed methodology to incorporate advanced data systems technologies as available and appropriate.

COMMERCIALLY DEVELOPED SPACE FACILITY

Dr. Fletcher, on February 11 the White House announced a new commercial space initiative that included the federal leasing of space on a man-tended commercially developed space facility [CDSF]. The New York Times had an interesting editorial strongly supporting that and said you should have that instead of a space palace, as they put it.

This was after the Congress late last year appropriated $25 million toward such a lease. Our idea was to provide an interim capability in view of the space station delays that were clearly going to result from congressional efforts to hold down federal spending.

I understand that the authorizing committees, especially the House Committee on Science and Technology, have some problems with this approach. I want to make it clear that if the authorizing committees don't want to pursue this interim capability, I am prepared to let it die, although I think it would be very short-sighted to put all our eggs in the permanently manned space station basket.

We did this when we phased out expendables because of the shuttle. I think we can all agree it was a big mistake.

The Senate authorizing committee seems to be making a good-faith effort to address some of the problems that inevitably attend the involvement of the private sector in this sort of venture. My understanding of the situation is that they want to do all they can to see that the commercially developed space facility, CDSF, is a success. I am behind that effort 100 percent.

REQUEST FOR PROPOSAL

I understand that Senator Hollings and Senator Riegle have asked you to delay release of the request for a proposal for the proposed commercial facility until certain problems, such as the reliability issue, can be addressed.

Can you tell us where the RFP now stands and also outline the steps you are taking to work with Senators Hollings and Riegle on the policy issues?

Dr. FLETCHER. Yes, Mr. Chairman. I am going to ask Mr. Myers to address that in a moment, but let me say that the CDSF is in no way a substitute or even a precursor to the space station. It is primarily a research platform for microgravity research, and that is of need to NASA and the federal government, as well as to the commercial world.

It is a product, if you like, of some of the early research that was done way back in the Skylab days, which you may remember, and also during the work done on the early shuttle flights. We found that there were a lot of processes, things like crystal growing and protein growth, new alloys and life science experiments, things of that sort that could be done under zero gravity that just aren't possible on the Earth.

So the commercially developed space facility will be an attempt by a private concern to satisfy both the needs of the commercial world, who want to actually make some of this stuff in space, and also providing a research platform for NASA and the rest of the government. We are in the process of putting that all together.

I don't need to remind you that this committee was the one that added the $25 million in last year's budget. We took that as a sign that that was the interest of Congress. So we have been working very diligently to try to make that CDSF work.

With that as an introduction, Mr. Myers, would you give us a status report on that?

COMPETITIVE INDUSTRY BIDDING

Mr. MYERS. Mr. Chairman, we have been working now for some time putting together a request for a proposal to have industry bid competitively on a commercially developed space facility. That work has reached the point where the last request for a proposal in draft form has been sent out to the industry for information, and we would be prepared, and, in fact, we intend to go out for bids on that at the end of the month.

We have been working diligently with the committees, the committee staffs, working out the various bottlenecks, let's say, from a financial and funding standpoint, and we hope to have those all cleared before the end of the month.

PROJECTED COST OF LAUNCHING FACILITY

Senator PROXMIRE. Apparently, a decision was made last Friday by the Interagency Group on Space to provide shuttle launches at $245 million a piece. Doesn't that high cost make it extremely difficult to proceed with the commercially developed space facility?

Dr. FLETCHER. I don't believe that was a decision made by the committee. That was an estimate by NASA as to how much the total cost of launching the facility would be. I don't think we have come to a conclusion on what the pricing policy should be.

Senator PROXMIRE. I heard there was an 8-to-1 vote on that.

Mr. MYERS. There was a working group. I think it is called IG Space Group, that dealt with that problem last week, but no final decision was made.

Senator PROXMIRE. What was the 8-to-1 vote? Wasn't it in connection with the $245 million expenditure?

Mr. MYERS. I think there was a general consensus that to meet what they saw at the time as being the space policy requirements, that you would add all the costs of all elements of the shuttle, including contingencies and amortization, and use that as a so-called fully recoverable program. That is not the final decision as to the cost to be used in the RFP.

Senator PROXMIRE. It is not the final decision? When will the final decision be made?

Mr. MYERS. We hope the final decision will be made prior to setting out the RFP. It is important to the bidders to know what kind of financial funding they are going to need.

Senator PROXMIRE. Roughly, when will that be? When is that likely to be?

Mr. MYERS. We intend to have the RFP worked out with committees and ready to go by the end of this month.

Senator PROXMIRE. The decision on shuttle costs?

Mr. MYERS. The decision on shuttle costs, we feel, will be made before we send out the RFP.

Dr. FLETCHER. At the end of this month is Thursday. I am not sure we can make it by Thursday. We are going to do our best to make it.

Senator PROXMIRE. It may be the end of this month or next month?

Mr. MYERS. We want it to be the end of this month. We think it is very important to have that price.

Senator PROXMIRE. No April fool, huh?

Mr. MYERS. If we are not able to get that price in the RFP, we are going to have some delays in the overall program.

MICROGRAVITY PAYLOADS

Senator PROXMIRE. You are asking for $59.8 million for microgravity shuttle space station payloads. That is an increase of $10 million above your current budget.

Recently the American Institute of Aeronautics and Astronautics [AIAA] came out with a report entitled "Space Processing: A National Crisis." The report cited the lack of access to space by both commercial and scientific investigators as a fundamental problem. The report also expressed the fear, and I quote:

> When the space station becomes operational 10 years from now, it will not be useful for laboratory studies because there are insufficient plans to develop the flight

laboratory hardware and technology base needed for meaningful experimentation and process development in space.

Then that report went on to advocate a $150 million a year budget to develop the space processing flight hardware and technology, as well as the ground-based research facilities needed for the space station.

What is your response to that criticism and that budget recommendation?

Dr. FLETCHER. Mr. Chairman, that wasn't meant to be a criticism. That was meant to be a recommendation, and we are pretty much on track in following that. I am going to ask Dr. Fisk to respond in a minute.

But, nevertheless we plan to not only provide the money for the research—and it is a significant increase in the fiscal 1989 budget for that with regard to research—but also for the facilities.

Senator PROXMIRE. I beg your pardon. This was a recommendation, but it was also criticism. It said this, and I will quote it again:

> When the space station becomes operational 10 years from now, it will not be useful for laboratory studies because there are insufficient plans to develop the flight laboratory hardware and technology base needed for meaningful experimentation and process development in space.

That is the criticism.

Dr. FLETCHER. All right. I will accept that as criticism, but we are in the process of responding to that criticism, as you called it, and we have actually doubled, for example, the amount of investment in microgravity research in the fiscal 1989 budget over fiscal 1987, and even fiscal 1988 was increased over fiscal 1987.

In addition to investing money in the instruments and the experiments, we have to invest the money in the facilities to produce microgravity. So we have a number of programs, including an increased number of space lab flights, including a program which extends the duration of the orbiter, and last, and of course, the Spacelab, which has always been in the program, and last but not least, if all goes well, this commercially developed space facility.

So we have responded, I think, to that recommendation and, as you say, criticism, in, I think, a very healthy and, hopefully, not an overly active way. Dr. Fisk can give you the details of what is in that budget.

Dr. FISK. Yes. We have in place, and it is supported by both the 1988 augmentation to microgravity that the Congress provided and our own 1989 budget and runouts from a very coherent plan, developing space station facilities for microgravity and for flying them in advance of space station on a number of different opportunities.

There is supported in the 1989 budget and building on the 1988 augmentation six facilities for microgravity, which are the ones recommended by the Microgravity Community for Research. They are to be flown first on the USML series in March 1991; they are to be flown a year later on the second USPE series. This is a new Spacelab series that we have inserted in the Spacelab management that manifest specifically to support microgravity research.

Senator PROXMIRE. Are you accepting the recommendation? I will read that:

> They advocate a $150 million a year budget to develop the space processing flight hardware and technology as well as the ground-based research facilities needed for the space station.

Mr. MYERS. I think that number is unnecessarily high. The total microgravity budget for all of microgravity research, including that which is done in the Spacelab, that which supports ground-based research, drop towers, university programs, and so on, grows to a number not unlike that in the mid-1990's.

The total amount of money which exists for microgravity facilities, lets's say, running it through about 1998, if there is a full development of the space station, totals to about $650 million. That is in the runout budget that we have proposed, and it delivers to the space station a fully developed set of instrumentation for microgravity as well as having had it tested and flown numerous times in advance of the station to develop the research in the research community.

INTERNATIONAL COOPERATION IN SPACE

Senator PROXMIRE. Let me ask you an entirely different question, one that I think is very, very important. The Soviet Union seems to be opening up their space program to outside observers to a much greater extent than ever before. They also seem to prefer cooperating with the United States instead of competing with us.

An article in the Washington Post quoted cosmonaut chief Vladamir Shatalov, a two-star air force general, as saying, and I quote:

> We have no clandestine plan to get the upper hand over the United States and get to Mars first. . A problem in those dimensions is a problem of all the countries of the world.

Can you tell us what steps NASA is taking to increase the prospects that we will cooperate with the Soviets in exploration of space?

Dr. FLETCHER. Mr. Chairman, you are quite right. That is an extremely important question. It ought to be dealt with by this committee. We had a vigorous program with the Soviet Union, as you remember. During my first term, culminating in the Apollo-Soyus Program, which was a first step in that process. Because of the difficulties involving international politics, most of our working groups were terminated in the late seventies and early eighties.

We, in 1986, reestablished a relationship with the Soviet Union and set up 16 working groups which are cochaired by the Soviet Union and ourselves, dealing with all aspects of space science, and particularly focusing on the planetary science. In that regard, particularly focusing on Mars.

Since that time, the working groups have been supplying data to each other; we have received very good data on the Soviet experience with their long-duration space flight and their Salyut space stations. They have the only data for up to 1 year that exists in the world on how human physiology behaves under zero G. We need that for extended duration space flights out to the Moon or to Mars. It is also clear that their long-range goal, whether it is announced or whether it is private, I think, Shatalov is right. They have made no effort to hide that. Their long-term goal is to send cosmonauts to Mars.

We haven't taken the step of saying we are going to cooperate in that.

Senator PROXMIRE. Why not?

Mr. MYERS. They haven't indicated to us that this is an appropriate step, but we have been in extensive discussions with them on that subject.

MARS EXPLORATION

Senator PROXMIRE. There is some concern to some Members of the Senate. Senator Matsunaga, as you know, is in this legislation, and a number of us are cosponsoring it, to press ahead with a cooperative trip to Mars. I can't understand for the life of me why we don't do it. It would cut the cost and serve the interests of both countries and all mankind. It would certainly help our relations with the Soviet Union to have that kind of of spectacular kind of cooperation. It seems to me it has all kinds of merit.

Dr. FLETCHER. Mr. Chairman, as you know, we have had private discussions on the subject, and I can't disagree with the statement. We do, though, have to take small steps before we take big steps, and we are taking those small steps. It may be that we will take a bigger step later on this year.

But we have to walk a little bit before we run. That would be a major step to start out on an enterprise of that sort. We have to really study it pretty hard first.

But nevertheless, I think it is something we ought to look at.

Senator PROXMIRE. That is good to hear. Do you feel it is a possibility, and do you favor it if we can work out the details? Is that fair enough?

Dr. FLETCHER. Yes, Mr. Chairman.

PLANETARY EXPLORATION BUDGET

Senator PROXMIRE. You are requesting a request of $83.6 million for the research and analysis portion of your planetary exploration budget, including $26.6 million for advanced programs. I understand that in 1989, you will be looking at providing the proposed Comet Rendezvous-Asteroid Flyby mission and the Cassini Saturn-Titan proposal with the possibility of suggesting a new start for a joint mission in 1990. Is this correct? If so, how much will you spend on the project in 1989?

Dr. FLETCHER. That is correct. We do plan to keep the—we call it the Mariner Mark II Program, which is the basis of the CRAF-Cassini venture, which is an exploration of the comets and the planet Saturn.

I think there is about $15 million in fiscal 1989 budgeted for that program.

Senator PROXMIRE. How much would that program cost altogether?

Dr. FLETCHER. I think it would be premature to give a precise cost, but it would be on the same cost of the other major planetary programs of the order of $1 billion.

Do we have an estimate yet of that, Len?

Dr. FISK. Yes. It would actually cost, in real year dollars, and so this is not in constant year dollars, about $1.5 billion. However, it would cost about $600 million over that for us to do the CRAF-Cassini mission as separate programs.

Senator PROXMIRE. Does your 5-year budget make any provision for future new starts such as CRAF-Cassini or resolution of the solar observer?

Dr. FLETCHER. The 5-year runout budget, Mr. Chairman, does not allow for new starts, as you know. Sometimes we put a planning wedge in for new starts, but our current 5-year runout only includes the runout of current programs.

Mr. CAMPBELL. That is correct.

Senator PROXMIRE. Thank you very, very much, and you have done an excellent job. You and I disagree occasionally on initiatives, but I think it has been healthy. I have great respect and admiration for the work you have done.

SUBMITTED QUESTIONS

[The following questions were not asked at the hearing but were submitted to NASA for response for the record:]

QUESTIONS SUBMITTED BY SENATOR PROXMIRE

Space Station - Latest Cost Estimate

Question 1: The National Research Council's Space Station Committee in its report of last September recommended that NASA prepare a new Space Station cost estimate as part of the Program Requirements Review that was scheduled to occur in 1988. Since that report was filed, the 1988 Station budget request was cut, the Station Program has of necessity been stretched out, and I assume the cost estimate has gone up.

Have you come up with a new cost estimate as part of your Program Requirements Review and, if so, what is that new estimate?

Answer 1: The Space Station Program Office will be formally initiating the preliminary requirements review at the end of April, 1988. The completion of the System-Level review is scheduled to occur in June of 1988. The results of this System-Level review will be provided to the Work Package Centers for incorporation into their Center-Level requirements reviews. These should be completed in late August. As a result of this activity, we plan to develop a technical and schedule baseline for the Space Station Program. Updated cost estimates are not a product of the Program Requirements Review. However, once the schedule and technical requirements are baselined, we will provide an updated cost estimate. The Program Requirements Review is not scheduled to be complete until later this summer.

Question 2: According to the March 21 issue of Space Station News, outgoing Station Chief Stofan told Congressman Nelson that the $342 million we cut from the Station budget last year will cost the country $1.4 billion in the long run. Does that mean that we should add a minimum of $1 billion to your previous Station cost estimate?

Answer 2: The Space Station Development cost estimate last year, assuming a 1994 First Element Launch, was $14.6 Billion in constant 1988 dollars (i.e., the budget was derived using prices and labor rates in effect in 1988 and no allowance was made for increases in prices due to future inflation).

We are in the process of assessing cost and schedule impacts with the Work Package Centers. This effort is not scheduled to be complete until later this summer.

Space Research and Technology - Pathfinder

Question 3: Your 1989 budget request includes $100 million for Project Pathfinder, which you characterize " as an important new program through which NASA will develop a broad set of technologies that will enable decisions on future space missions." However, I wonder whether Pathfinder is truly a new initiative or simply a repackaging and augmentation of a number of existing programs. Let me explain what I mean.

First, as I understand it 30 percent of Pathfinder's funds - $30 million - will be spent on ground engineering for a NASA/DOD/DOE nuclear power technology program known as SP-100. As I understand it, you are currently spending about $10 million on the program while DOE is spending $59 million and DOD is providing $30 million. Can you tell me why NASA's investment is tripling?

Answer 3: Project Pathfinder is a major new technology initiative that will support a broad range of future space missions. Pathfinder is focused on the development of critical, high-leverage technologies for future piloted and robotic solar system exploration missions. Advancing space power technologies will be critical to the success of most, if not all, of these future missions. For missions which require high power levels, and in particular those which must operate during sustained periods of darkness (such as a lunar base), space nuclear power provides a tremendous mass savings over any other viable technology. In the case of a Mars exploration mission or planetary missions using electric propulsion, nuclear power can provide substantial operational advantages.

The tri-agency SP-100 program, initiated in FY 1986, will provide a validated technology base for space nuclear power systems in the 10's of kilowatts to the hundreds of kilowatts electric power range. As originally planned the development of reactor technology was be funded by SDIO (expected at that time to be the first user) and DOE. NASA would develop the advanced conversion system technology needed to use the SP-100 reactor in civil missions. Because of the overwhelming requirement for nuclear power in the Pathfinder missions, NASA included funding support ($30 million) for nuclear power in the FY 1989 Pathfinder initiative. In FY 1988, because of reductions in the SDIO budget and changes in the SDI deployment strategy, NASA found it necessary to redirect $10 million of the funds planned for advanced conversion technology to the GES Program, to keep this critical effort viable until Pathfinder funds were available. The space nuclear reactor technology being validated in the SP-100 Ground Engineering Systems (GES) Program, coupled with NASA's advanced power conversion technology being developed under CSTI, will enable the development of high capacity, long-life nuclear reactor power systems needed to support possible future missions such as sustained Lunar bases, Mars surface base operations and large interplanetary electrically propelled cargo vehicles. We believe the subject integrated program best serves the national interests, and utilizes effectively the respective resources and talents of the cognizant parties.

Question 4: In the current fiscal year your SP-100 dollars are in the Civil Space Technology Initiative (CSTI) Program in large part. Will you be spending any CSTI money on the SP-100 program in 1989?

Answer 4: In FY 1989 it is planned that NASA support to the SP-100 GES will be part of the Pathfinder program. CSTI funds will support NASA's ongoing development of the advanced power conversion technology required for high capacity, civil mission nuclear power systems.

Question 5: You plan to fund a $6 million chemical transfer propulsion program under Pathfinder in 1989. I understand this program is currently being funded at $5 million as part of your research and technology base activity so that the $6 million is an increase of $1 million over the existing level of support.

Answer 5: The $6 million funding in Pathfinder for Chemical Transfer Propulsion will allow a focused program of component and system level technology verification to be initiated. The R&T Base program generates advanced concepts and develops analytical models, computer codes, design approaches and diagnostic tools that will provide the basis for component and system technology efforts to be conducted under the focused effort. The Pathfinder will build on and continue to interact with the fundamental research and technology activities being conducted in the R&T Base and the experimental data base from the focused program will be used to validate the design and analysis methodology being developed in the base program, for use in future programs. In FY 1989, we plan to continue the R&T Base program at about the $5 million level. Both the generic and focused programs are needed to provide a technological capability and a validated technology base that will meet the propulsion systems requirements of future orbital transfer, planetary and lunar transfer and lander and ascent vehicles.

Question 6: To take one more example, your Pathfinder program includes $7 million for cryogenic fluid management. As I understand it you are presently spending $5 million for this kind of work under your space flight research and technology base program. Can you tell me how the Pathfinder cryogenic program differs from the current program?

Answer 6: The R&T Base work in cryogenic fluid management has reached a stage that a focused program is needed. A focused program has been included in Pathfinder (Cryo Fluid Depot). Under this program, full scale ground system tests will be conducted to provide data at one "g" to verify models developed in the R&T Base effort and to provide test data to define the requirements of a zero "g" flight experiment. This shift from a fundamental research effort in cryo fluid management to a focused Space Cryogenic Fluid Depot effort in Pathfinder permitted the funds to be realigned into the propulsion R&T Base, a part of which will be directed to fundamental technology efforts in propulsion system cryo fluid management on-board advanced space based vehicles requiring on orbit refueling.

Question 7: If we add up the requests for all of the Pathfinder programs that are currently receiving funding elsewhere we come up with a grand total of about $78 million of the proposed $100 million effort. This being the case, isn't it misleading to call Pathfinder "an important new program"?

Answer 7: Project Pathfinder is new. However, while it is new, Pathfinder -- like most NASA new starts -- is built upon a solid foundation of pre-"new start" activities. For Pathfinder, that foundation includes expertise, mission needs, and ongoing, discipline-oriented technology programs.

Although funding for the first year of this period is budgeted at $100 million, through Pathfinder, we plan to make an investment of approximately $840 million over the first five years of the initiative. The level of funding in FY 1988 on Pathfinder areas is approximately $25 million (including $10 million for SP-100) -- a small fraction of the projected $840 million investment.

Moreover, this amount is entirely in line with standards for major NASA new starts. For example, the Advanced X-Ray Astronomy Facility will have invested a total of approximately $110 million prior to an FY 1989 new start approval.

Although not a flight project, nor a specific mission, Pathfinder is a project-like activity that will allow NASA to develop critical, high-leverage technologies for future missions of Solar System exploration. With Pathfinder, NASA plans to take key technologies to a point at which future flight project managers can make the decision to incorporate these high-leverage technologies without incurring unacceptable levels of programmatic risk and cost overruns.

Pathfinder is a critical step if we are to make intelligent and informed national decisions regarding future Solar System exploration initiatives; Pathfinder is also essential if we are to have those technologies ready when we need them.

Advanced Solid Rocket Motor

Question 8: You are requesting $1.4 billion for shuttle production and operational capability in 1989, an increase of about $312 million over your current budget. About half of this request is for propulsion systems and, as I understand it, the propulsion systems budget includes $88 million for work on an advanced solid rocket motor (ASRM). Is that correct?

Answer 8: Yes

Question 9: The National Research Council's (NRC's) Committee on the Space Station in its September report indicated that it believed "improved space transportation is needed for a sound space station program" and specifically endorsed new solid rocket motors with increased performance and reliability. How important is the ASRM effort to a sound space station program - is it absolutely essential, in your estimation?

Answer 9: The ASRM will provide a significant improvement to the safety of the Space Shuttle. It will also provide enhanced performance. Although not required for the Station, NASA's plan for the ASRM anticipates that the ASRM will be available in time to support Space Station deployment. Because the new solid booster will have a performance goal to add 12,000 lbs. to the Shuttle's payload capability, it would greatly assist in meeting the Station's launch requirements, by providing greater weight margins for the launch of assembly packages, by permitting greater prelaunch integration of the packages, and by increasing initial outfitting of both the laboratory and habitat modules.

Question 10: The NRC's report indicated the development of a new motor was estimated by NASA to cost between $800 million and $1.6 billion in 1988 dollars. That's a pretty wide spread. Can you give us a more precise estimate today?

Answer 10: The ASRM development is estimated at just under $1 billion in real year dollars. This estimate includes the prime contract and the supporting Government expenses for test support, Shuttle system analysis and integration, and launch site planning and support. This does not include the construction (brick and mortar) of a modern processing plant estimated at $200-$300 million.

Part of the spread in the estimate provided to the NRC resulted from the fact that no decision had been made at the time on a segmented vs. a more expensive monolithic motor design. The budget estimates reflect a segmented motor baseline decision.

Question 11: You are requesting $27 million under your facility construction budget to initiate the construction of a government owned-contractor operated (GOCO) facility for the production of the proposed ASRM. I believe the total cost of this facility would be about $200 million. Is that correct?

Answer 11: The $27 million, to initiate construction of a Space Flight Control and Data Communications plant, is included in the FY 1989 request of $88 million. The design and construction of a modern plant for ASRM processing is estimated at $200-$300 million in real year dollars.

Question 12: How important is a GOCO facility to ASRM?

Answer 12: Since there is no existing facility capable of providing the process control and automation necessary to achieve the levels of reliability and reproducibility sought, a new facility is required. Although one contractor has recommended modification of an existing facility, that plan is substantially a new facility, and necessitates a significant Government investment which, through depreciation or amortization, would likely be greater than an investment in a new GOCO facility. NASA also believes that public safety for the long term can best be protected by having alternate means of transportation for loaded motors. The Government owns sites that would accommodate such a production facility whereas industrial property would have to be acquired at an expense to the Government.

The ASRM production facility will be unique and of a technological level unequaled in the industry. The cost of the facilitization and the ASRM production rate make it impractical to duplicate the ASRM facilities for alternate source procurement. Thus, to protect the Government's interests in terms of product reliability and cost, NASA believes that the capability to recompete the production contract, if required, is essential. Facility options supporting this requirement will be assessed as part of the overall ASRM procurement process.

Shuttle-C

Question 13: Dr. Fletcher, in your prepared testimony you indicated that you expect to complete your Shuttle-C studies in 1988 and evaluate this alternative as part of the Joint NASA/DOD Advanced Launch System program.

Do your five-year budget projections assume that you will be developing a Shuttle-C or would those costs be additive?

Answer 13: The costs for developing Shuttle-C are not included in our five-year budget projection.

Question 14: Can you give us a rough idea of how much it would cost to develop a Shuttle-C?

Answer 14: The projected development cost for Shuttle-C is approximately $1.2 billion plus cost of the initial flight test which will carry a payload. This cost projection will be updated at the end of the systems definition effort.

Question 15: Will you be spending any dollars in fiscal 1989 on the Shuttle-C concept?

Answer 15: NASA has not requested any funding in FY 1989 for Shuttle-C definition studies or development. However, there is $10 million allocated in FY 1988 funds for continuation and expansion of the Shuttle-C system definition effort which will end in FY 1989.

Shuttle Safety

Question 16: As you know, Dr. Fletcher, there continues to be a great deal of talk about Shuttle safety.

The Committee on Shuttle Criticality recently issued a report of the steps NASA is taking to improve safety systems in the wake of the Challenger disaster. The good news was that the review should not affect your first launch date. The bad news was that the Committee made a number of negative comments. I'd like to take a few minutes today to review some of these comments with you.

First the panel stated that risks in STS operations now are assessed based on subjective judgments and that NASA lacks objective, quantifiable measures of relative risk. The Committee wondered how NASA could expect to implement a truly effective risk management program without such measures. Do you share this concern?

Answer 16: We share your concern regarding an effective risk management program for the Space Transportation System (STS) and for all NASA programs and facilities. I will first address this concern in general, and then with respect to the STS.

Our concern resulted in the establishment of the Office of Safety, Reliability, Maintainability and Quality Assurance (SRM&QA) at the Associate Administrator level, reporting directly to the Administrator. Significant staff and budget enhancements have been made in SRM&QA. In particular, a Risk Management Program has been established in the Safety Division within SRM&QA, with responsibilities for risk management policy development, assistance to programs in the development and implementation of risk assessment methods and risk management programs, and oversight of risk assessment and risk management activities.

On February 3, 1988, NMI 8070.4, "Risk Management Policy for Manned Flight Programs" was issued. This management instruction delineates the NASA policy of using risk assessment and risk management processes that are "appropriate" to each specific situation. This marks a new era in NASA risk management implementation, and it has important implications for the way that risk-based considerations will be used in support of risk disposition decision-making. Other NMIs for unmanned programs and for facilities are in preparation, as are handbooks to provide guidance on risk assessment tools and techniques, and on further delineation roles and responsibilities in risk management.

NMI 8070.4 states that "development of quantitative risk assessment methodology and associated data base requirements for application to future manned flight system is a NASA objective." With regard to the implementation of such risk management methods for STS, one must recognize that the STS is a program with a wealth of accumulated engineering knowledge regarding system vulnerabilities. This knowledge has been enhanced by the hazards analyses and failure mode and effects analyses (FMEA) that have been conducted. A prioritization system for critical items lists (CIL) has been implemented, as an important first step in dealing with critical items in a manner more directly related to risk considerations. Based on the state of knowledge regarding STS, the extensive current CIL and hazard rebaselining, and the redesign efforts, appropriate attention is being paid to the priorization of critical items for first flight, within the context of the manner in which NASA has operated with substantial success, in a "risky" environment, for many years.

Subsequent to first flight, the system will be reviewed and revised as appropriate, based on the experience gained through several Probability Risk Assessments (PRA) which have been completed or are in process on portions of the STS. NASA is cognizant of the potential advantages of PRA as a tool for dealing with risk prioritization based on consideration of likelihood of occurrence of potential accident scenarios, and the distribution (as opposed to worst case) of potential consequences. Nevertheless, the use of such techniques should be dictated by thorough consideration of many factors, including need, cost, benefits to be derived, and data availability. The Committee recognized that great care must be taken when applying PRA techniques when it states "...that these approaches should not substitute for good engineering and quality control practices in design, development, test, manufacturing, and operations, all of which must continue to receive high priority emphasis by NASA and its contractors."

Question 17: The Committee was also concerned about your practice of waiving an average of two Launch Commit Criteria for each shuttle flight, which "institutionalized" waivers by routinely permitting established criteria to be violated. The panel recommends that NASA establish a list of non-waivable Launch Commit Criteria, which would compromise the bulk of the criteria, and separately list a limited number of criteria together with a discussion of when, and by whom, they could be waived. Do you agree with the recommendation?

Answer 17: The issue of waiving Launch Commit Criteria (LCC) has had considerable attention over the past two years. All of the launch criteria associated with the National Space Transportation System (NSTS) have been thoroughly reviewed and revised by the cognizant organizations including the Office of Safety, Reliability, Maintainability and Quality Assurance. As a result of these reviews, numerous changes have been made which are designed to ensure a safe vehicle at the time of launch. The LCC are currently being exercised in pre-launch simulations designed to discover any weakness in the criteria in order that appropriate changes can be made. The purpose of all this activity is to eliminate the necessity for waivers to the LCC during launch countdown operations.

The basic rules regarding waiving of launch criteria are:

- No LCC will be waived after launch minus five minutes (L-5).
- The weather criteria will not be waived.
- All launch criteria waivers will be documented in writing with supporting rationale and approved by the Deputy Directors, NSTS Program and NSTS Operations, before the launch can proceed past L-5.

Every attempt will be made not to waive launch criteria during the countdown; however, a total restriction against waivers would be operationally unrealistic. The rules are in place to prevent making critical decisions in a hasty manner and/or within the proper chain of review. Finally, if any criteria are waived for a launch, they will be reviewed post-flight with the intent to modify them prior to the next flight so that subsequent waivers will not be required.

Question 18: Finally, the Committee questioned the independence of hardware and software certification, validation, and verification processes, pointing out that these functions were carried out by the same organizational elements responsible for the design and fabrication of the units. How do you respond to the panel's recommendation that these approval functions should be vested in a separate entity?

Answer 18: The question of independent verification is one which we are especially aware of. The Office of Safety, Reliability, Maintainability and Quality Assurance has the responsibility for developing certification plans, reviewing the results, and approving the certification of the Space Tranportation System independent of the program office. The responsibility for implementing the certification plans is assigned to the SRM&QA offices at the three STS flight centers (JSC, KSC and MSFC). While the recommendation to create a separate organization whose sole purpose would be validation and certification has some merit, it is not practical in light of the budgetary constraints we are experiencing. Therefore, it is our intention to strengthen the Offices of SRM&QA at Headquarters and the field centers to the point where the independent assessment and approval functions will be vested in these offices.

QUESTIONS SUBMITTED BY SENATOR LAUTENBERG

As you know, the President requested $11.5 billion for NASA in the FY 1989 budget. This is a $1.5 billion increase over the amount Congress appropriated for NASA last year. According to the President's request, the Space Station would receive $967 million.

Question 1: When do you expect the Space Station to be launched if it is funded at $967 million next year?

Answer 1: Assuming NASA receives an FY 1989 budget appropriation for the Space Station of 967 million, the First Element Launch should occur in the first quarter of calendar year 1995.

Question 2: What would be the impact on the launch date if less than the requested amount is provided?

Answer 2: Should less than the requested amount be provided, the Space Station Office would have to do a thorough analysis of the impact of the specific reduction on the schedule. The current schedule assumes receipt of the entire amount and would be adversely impacted by any significant reduction in the FY 1989 appropriation.

Question 3: What about the additional cost to the government? How will total costs of the Space Station be affected by providing less than $967 million next year?

Answer 3: When a program is delayed additional costs are incurred. Should NASA Space Station receive significantly less than $967 million requested for FY 1989, an analysis will have to be done of the impact of the specific reduction on both the schedule and the costs. Should there be a delay in the schedule, increase costs associated with the retention of critical engineering personnel for a period longer than planned and the impact of inflation will occur. At the present time, we are unable to provide more specific data since our current budget and schedule plans are based on receipt of the full amount of FY 1989 funding.

Question 4: In FY 1988 Congress appropriated $425 million for the Space Station. What is the status of that money? What about the $90 million for the Space Station that was held over from FY 1987? Has all of the money been obligated?

Answer 4: Of the $425 million, only $392 million is actually available for research and development efforts; the remaining $33 million reverts to research and program management activities under the appropriation realignment. Of the $392 million available for R&D efforts on Space Station, $149.8 million has been committed through May 31, 1988. We didn't receive authority to commit the $225 million from the Congress until May 31, 1988.

Of the $90 million of FY 1987 money, it is anticipated that these funds will be obligated in June.

Advanced Communications Technology Satellite (ACTS)

An agreement to cap the Advanced Communications Technology Satellite (ACTS) program at $499 million has been reached by NASA and the Senate Appropriations Committee. Despite the agreement and the continued congressional commitment to the program, no money was requested for ACTS in the FY 89 budget.

Question 5: This is the fourth year in a row that the Administration has not requested money for ACTS. Why?

Answer 5: A basic policy of this Administration is to limit governmental responsibilities to basic R&D and not to implement system demonstration projects. The Administration's position is to avoid possible competition with activities more effectively undertaken by the private sector. In the case of ACTS, an FCC application had been made in 1984 by the private sector to operate an ACTS-like Ka band communications satellite that is responsive to market needs.

Question 6: What will it take to convince OMB and NASA that the program should be funded?

Answer 6: As stated above, the policy not to seek funds for ACTS is based on principles of governmental roles and responsibilities held by the current Administration.

Question 7: It is no surprise that the Italians, Europeans, and Japanese are investing substantial funds in this technology area. Don't you agree that in light of the foreign competition, America needs to forge ahead with the ACTS program?

Answer 7: The Administration continues to support research investments for future communications satellite technology. The question becomes one of the extent to which the government must demonstrate a technology before it is incorporated in the business plans of the industry. In the case of ACTS, the Administration has taken the position that an on-orbit demonstration is not a role for the Federal government but for the private sector. Our communications technology programs are focused on maintaining a technological advantage in the international market place and improving services in the domestic sector that will enhance our overall productivity and quality of life. It is the role of the private sector to develop and operate a communications satellite based on these programs if it can be responsive to market needs and competitive ground communications systems.

Question 8: Don't you agree that continuing to fund the ACTS program is our best hope of maintaining America's leadership in communications satellite technology?

Answer 8: The technologies being developed by the ACTS program certainly have the potential to revolutionize the communications satellite capabilities of the future in terms of hopping, spot beams; onboard processing; higher frequency utilization, etc, provided these technologies can be integrated in such a fashion as to be responsive to user needs. It is not the government's role to make such judgments. Here again, however, the question becomes one of the extent to which the government should demonstrate a technology in order to prove its value and encourage its adoption for specific operational applications.

Question 9: What did NASA do to address the issue to keep the cost of the ACTS program down?

Answer 9: Consistent with the Congressional mandate to cap the program spending, NASA urged its contractors to submit innovative options, including further risk taking and cost-sharing by the contractors, to meet the cap. Various options were reviewed and the lowest cost option proved to be one that led to transfer of payload development activity from TRW to GE. Additionally, another GE subcontractor, COMSAT Laboratory, now reports to NASA LeRC directly.

Question 10: Has this been effective? Why?

Answer 10: The formalized restructuring of the contractual agreement is just now reaching completion. It is therefore too early to remark on the effectiveness of the new approach based on actual performance.

Rotary Engine

I understand that the President did not include money for the advanced rotary engine program in his FY 1989 budget request. Last year, the President requested $750,000 for the program and the Congress appropriated an additional $2 million to ensure that the program would be adequately funded. I am told that the program will require $3.2 million in FY 1989 and FY 1990 as protection against further erosion of the American general aviation industry.

Question 11: Do you agree that the rotary engine holds the promise of helping America to regain its competitive edge in general aviation?

Answer 11: Yes, we agree that an advanced rotary engine capable of providing multi-fuel capability, reduced fuel consumption, and increased power density can be a potential factor in helping the U.S. to regain its competitive edge in the general aviation market.

Question 12: Will NASA provide $3.2 million for the rotary engine program in FY 1989?

Answer 12: In FY 1988, total funding for the advanced rotary engine program is $3.1 million. NASA intends to fund this program at the $3.1 million level in FY 1989.

Question 13: How much will NASA request for the program in FY 1990? In FY 1991?

Answer 13: NASA plans to fund the advanced rotary engine program at a level of $3.5 million in FY 1990 and FY 1991.

QUESTIONS SUBMITTED BY SENATOR GARN

Question 1: You have described this year as "crucial for the civilian space program. You explained that the agency's entire future "rides at risk" in this FY 1989 budget determination. Yet, NASA is requesting almost a 30 percent increase in budget authority. Could you explain the areas in which the nearly $2.4 billion dollar increase will be spent and why that amount is necessary to avoid the space program from being "cut off at the knees"? I realize that certain amounts of the increase is for the Space Shuttle, but what programs are being enhanced and what new programs are being initiated and why are they "crucial" to the overall civilian space program next year?

Answer 1: About $2 billion of the $2.4 billion increase requested for FY 1989 is for continuing ongoing activities approved by Congress in FY 1988. These activities include completion of the Shuttle recovery efforts and the preparation for resumption of flights, the development of the Space Station, implementation of the mixed fleet of expendable launch vehicles, the launch of several major Space Science missions, replacement of the Tracking and Data Relay Satellite (TDRS) lost in the Challenger accident, development of the second TDRS ground terminal, and continuation of the technology maturation efforts on the National Aerospace Plane. These all represents high priority programs in which NASA has made a considerable financial and human resource investment and which are close to reaching fruition.

The largest share of the increase, $770 million is required for the Space Transportation System. $600 million of this increase is necessary to complete the Shuttle recovery efforts and support the buildup of hardware and the necessary workforce to support the planned flight rate of 7 flights in 1989 and 10 flights in 1990. The remaining $170 million is required to begin procurement of ELV's to implement the mixed fleet plan started consistent with Congressional direction in 1988.

The Space Station, one of NASA's highest priorities, requires an increase of $600 million in Research and Development and facilities funding over the FY 1988 level as it moves into full-scale hardware development. The major contractor teams are in place and after several years of constrained funding, program rescoping and definition, the program is ready to move forward into the development phase. The Space Station will be the cornerstone of this country's space exploration efforts and instrumental in research in materials processing, life sciences, spacecraft servicing and automation and robotics technology.

About $200 million of the increase in Space Science and Applications is for projects previously approved and currently under development. A number of major astronomy and planetary missions will be ready for launch when the Shuttle returns to operational status. The Galileo and Magellan missions and the Hubble Space Telescope are manifested for Shuttle launch in 1989, followed by the Gamma Ray Observatory and Ulysses spacecrafts in 1990. The Cosmic Background Explorer and ROSAT are scheduled for launch in 1989 and 1990 on Delta launch vehicles. Also well into the development phase are the Upper Atmospheric Research Satellite, Mars Observer mission, Spacelab and Microgravity mission planning, and the Global Geospace Science mission. These missions represent the assurance of future U.S. leadership in space science and present the scientific challenges for future U.S. scientists.

The replacement of the TDRS spacecraft lost in the Challenger accident, the second TDRS ground terminal, other tracking support and continuation of NASA's effects on the National Aerospace Plane for about $200 million of the total increase. The TDRS and ground terminal activities are important to insure operational continuity and redundancy to the space tracking and data relay system. The National Aerospace Plane technology is a critical national hypersonic and transatmospheric research effort being conducted in partnership with the Department of Defense.

There is approximately $375 million included for new initiatives and augmentation. The two major development projects included are the Advanced X-ray Astrophysics Facility (AXAF) and the Advanced Solid Rocket Motor (ASRM). The AXAF is the third of the Great Observatories to be developed and will provide an opportunity to detect x-rays from sources throughout the universe with an unprecedented degree of sensitivity and precision. The AXAF is planned for launch in the mid 1990's and is the only major space science project planned for launch in that time period. The ASRM will enhance the flight safety, reliability and performance of the Shuttle. The ASRM will play a crucial role in NASA's plan to provide a man-tended capability early in the Space Station assembly sequence. The "Pathfinder" technology program, an integral part of the President's National Space Policy, will allow NASA to develop critical high leverage technologies for potential future missions to extend human presence beyond Earth orbit into the solar system. An augmentation is included for technology efforts in aeronautics for advanced propulsion, aviation safety and composite activities. NASA's aeronautics program is the nation's sole source of innovative long-term aeronautical research. The program emphasize high-risk, high pay-off emerging technologies to enable the development of new generations of civil and military aircraft by U.S. industry and provide unique technical support to industry, the Department of Defense and other major government agencies for major aeronautical programs. Finally, about $100 million is included for enhanced institutional capability covering additional personnel for Shuttle and a special long range program to modernize the NASA wind tunnels. These wind tunnels, many of which are over 30 years old, are a national resource of critical importance to NASA, DOD and private industry research and development efforts.

Yesterday, some of my colleagues questioned you concerning the purposes and goals of the Space Station. Some members may not be yet convinced that the Station as planned is properly designed to achieve the purposes of the civilian space program. One Senator cited in particular the alleged weaknesses of the program contended by Dr. Carl Sagan and Dr. James Van Allen at last year's Space Station Special Hearing and wondered whether the Station's programs could simply be pursued separately, without a Station.

My understanding is that the Space Station not only addresses the purposes of the civilian space program, but that it greatly enhances the pursuit of those goals. I want to ask a series of questions concerning the Space Station program.

Question 2: How will the Space Station Program expand our knowledge of the Earth and of phenomena in the atmosphere and space?

Answer 2: The Space Station Program will contribute key Earth observation capabilities vital to understanding the Earth's environmental system. These include both instruments attached to the structure of the manned base, and those on the U.S. and European polar platforms.

There is now evidence that global changes in the Earth's atmosphere, oceans, and land surfaces may be influenced in part by human industrial and agricultural activity. The extent and long-term character of these global trends have generated worldwide concern and led to the initiation of international research programs to investigate their causes and consequences.

Space technology will play a key role in future Earth observing systems designed to study global change. The United States will provide leadership in this area by providing the first polar-orbiting platform (an essential part of the overall Space Station Program).

The study of global change requires a series of highly capable space platforms in polar orbit, each designed to accommodate numbers of instruments for simultaneous observations of global variables. The Earth Observing System (EOS), now under study by NASA for initiation in the early 1990's will provide this observational capability. The U.S. polar platform to be provided through Phase I of the Space Station program is scheduled to be the platform for EOS. A second platform will be provided by the European Space Agency in early 1997 it will complement the EOS missions of the U.S. platform. Japan is also investigating the possibility of providing a polar platform.

In addition, some of the payloads attached to the manned base will study the earth's equatorial region. The possibilities include an earth radiation budget instrument to continue an important long-term data set on the earth's global radiation budget, and a tropical rainfall measuring mission to measure rainfall extent and intensity in the tropics. These will contribute to the global change effort by further examining the "engine" that drives our long-term weather system.

Question 3: How will the Space Station Program lead to improvement of the usefulness, performance, speed, safety, and efficiency of space vehicles?

Answer 3: Future missions, whether they are manned or unmanned exploration of the planets, or the establishment of manned outposts or bases will require a new class of space vehicles. These vehicles are likely to be very large requiring on orbit construction, fuel depots to supply them with propellants, and be easily maintainable and refurbishable on orbit.

The Space Station will serve as a facility for developing some of the enabling technologies such as on-orbit construction methods for large structures, the establishment of the data bases for materials compatibility with the space environment, and the storage and transfer of cryogenic fluids. Other technologies that will be developed on the Space Station and will benefit future spacecraft are advanced robotics, autonomous systems, and closed cycle life support systems for manned vehicles.

Question 4: How will the Space Station Program lead to the development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space?

Answer 4: The enabling technologies developed on Space Station for providing advanced vehicles with the above capabilities include advanced robotics, which will enable the transfer of equipment from a low-earth orbit depot to the spacecraft and closed cycle life support systems.

The major contribution in this area, however will be to determine the effects of long duration exposure to the space environment on humans. It will be this knowledge, and the development of countermeasures to those effects that will ensure the health and productivity of the crew through long duration space missions such as a journey to Mars and return. All of these activities, taken together, will help America meet the President's objectives--recently reaffirmed in the February 11, 1988 National Space Policy..."to expand human presence and activity beyond earth orbit into the solar system."

Question 5: How will the Space Station be used in the potential space initiatives for the late 1990's as explained in Dr. Sally Ride's Report, "Leadership and America's Future in Space?"

Answer 5: The Space Station is a stepping stone to accomplish the four candidate initiatives as identified in "Leadership and America's Future in Space." For the two manned endeavors, that is, Outpost on the Moon and Humans to Mars, the Space Station is an indispensable element of the missions. Depending on the aim of the U.S. space program, the Space Station must have the flexibility to evolve to a role ranging from the isolation of a returned planetary sample to a central role as a low Earth orbit transportation node. This transportation node will require the following functional capabilities: assembly, checkout, and servicing of large transfer vehicles; storage and handling of massive amounts of propellant; habitation and support infrastructure for the work and transfer crews. Additionally, research at the Space Station will target answers to crucial life science questions even as the Station itself serves as a technology and systems testbed.

Current Space Station evolution planning emphasizes understanding the requirements posed by each of the initiatives on the Space Station and facilitating the accommodation of these missions. To this end, evolution planning focuses on generating possible update scenarios. These scenarios can then be implemented as soon as a particular mission or evolutionary path is selected. These scenarios produce evolution reference configuration, baseline design requirements ("hooks" to software and "scars" to hardware), and evolution technology requirements. The results of these analyses are shared with the Offices of Exploration and Space Science and Applications, which now have responsibility for the more detailed definition of the leadership initiatives.

Question 6: How will the Space Station Program seek and encourage to the maximum extent possible the fullest commercial use of space?

Answer 6: Private enterprise will be able to participate in the Space Station program in two ways. The first is by utilizing Space Station services. The second is by developing or operating Station systems and services. The first refers to the utilization of Space Station resources to achieve a commercial end -- a customer, if you will, of the Space Station. The second is new and different. It means private sector design, financing, construction, and operation of Space Station infrastructure, both ground based and on-orbit, with the private sector offering the services of such infrastructure to all users.

Consistent with existing and recent NASA/national policies, the Space Station program is committed, to the greatest extent feasible, to encouraging private sector design, financing, construction, and operation of future Space Station requirements -- where such activities are consistent with mission requirements and overall cost effectiveness. The program established formal policy guidelines in 1986 to encourage such participation. The Space Station Office is currently revising and updating these guidelines. The revised guidelines will strengthen and clarify NASA's commitment to private sector investment in the Space Station program, consistent with the President's recent Commercial Space Initiative (CSI). Industry, however must take the lead to develop specific concepts they believe will be profitable. The Space Station program has formed an industry association to provide commercial input, and solicited contractor support to address commercial participation. In the fall of 1987, NASA's Space Station Office, with the Office of Commercial Programs, conducted a major workshop in Nashville from which numerous specific recommendations emerged.

The Space Station program is currently examining (in conjunction with The Office of Commercial Programs, Office of the General Counsel, and the Office of Procurement) how best to review proposals for commercial provision of infrastructure, into the program. This effort will seek to establish criteria and procedures for evaluating unsolicited proposals rapidly, fairly, and with minimal disruption to the ongoing Space Station program. This effort will further seek to identify any legislation which might be necessary for NASA to implement the President's CSI effectively.

Proprietary proposals, reflected in the overall Work Package contract proposals, will afford the Space Station program an opportunity to develop operational procedures and mechanisms to integrate innovative private sector participation early on in the Space Station program.

Question 7: How will the Space Station Program increase international cooperation in the peaceful and economic development of space?

Answer 7: President Reagan mandated NASA to seek international participation in the Space Station program because it would allow for a more capable facility and be a symbol of the value of international cooperation. The Space Station program will establish unprecedented levels of international cooperation and partnership in space. This Program will establish characteristically new long-term international partnerships in space. The Space Station agreements will be for the duration of the Program, roughly 30 years.

The partners will be providing significant hardware contributions to the Program allowing for a vastly more productive facility. The Space Station International partners will be contributing the following elements to the Space Station Program:

Country	Element	Cost
ESA	Columbus Program	4.2 Billion*
	--Attached Pressurized Module	
	--European Polar Platform	
	--Man-Tended Free Flyer	
Japan	Japanese Experiment Module	2.0 Billion**
Canada	Mobile Servicing System	1.0 Billion***

- International participation in this program demonstrates our ability to work with our friends and allies in a civil program of a large scale and unprecedented duration.
- As the President indicated at the London economic Conference in 1984, the Space Station will provide a focus for free world Space operations well into the 20th Century.

* As of 12/87 the Figure was 3.713 Billion Accounting Units (A/U) The current exchange rate is 1 A/U =1.14

** This figure is based upon an exchange rate of 150 yen/dollar

*** Based on current Canadian exchange rates

Question 8: How will NASA make available to other agencies and the private sector the technological advancements achieved by the Space Station? And what are the predicted advancements?

Answer 8: The Offices of Space Station and Commercial Programs have established mechanisms by which Space Station technology advancements will be made available to other agencies and private sector. The Office of Commercial Programs, Technology Utilization Division, will review new technology reports submitted by the Space Station contractors. Information describing new technological advancements will be disseminated to the private and public sectors by selective display in NASA Technical Briefs Journal. These sectors may request detailed NASA Technical Support Packages on specific technologies. Space Station technology transferred to terrestrial applications will be described in NASA's annual issue of Spinoff magazine. The Technology Utilization Division will continue to respond to priority needs as determined by other agencies and U.S. industry by developing cooperative applications engineering projects. The Space Station Program offers major opportunities for applying NASA technology to the solution of these needs. For example, the Technology Utilization Division is currently engaged in application engineering projects with such agencies as Department of Defense, Department of Energy, National Institutes of Health, and the Veterans Administration.

As one of the most complex technological activities undertaken, the Space Station is planning to use a number of advanced technologies in many technology disciplines. Examples of technology-driven systems that could be used in the public and private sectors include:

- Automation and Robotics
  - Fault detection, isolation, and recovery automation systems
  - Knowledge-based expert systems, including task/work schedulers, event/sequence planners, and resource allocation managers
  - Telerobotics systems, as exemplified by the Flight Telerobotic Servicer for remote assembly, servicing, and operations
  - Telerobotic control systems
  - Autonomous robot systems, including smart manipulators, flexible force-reflecting end effectors (smart hands), and automated control techniques
- Communications
  - Integrated system network architecture for multi-access and multi-distribution of high volume data at high data rates, using microwave or optical links, efficient software coding, error code correction, traffic protocols, processing, and customer interfaces
- Data Management Systems
  - Network and network interfaces technology
  - Ada software refinement and applications
- Environmental Control, Life Support, and Extravehicular Activity (EVA)
  - Environmental control systems

  - Regenerative life support systems, including air/water cleaning and conditioning
  - Food/hygiene technology
  - Health monitoring and function controls, including prothesis aids with imbedded control processors
  - Effective man/machine interactive systems, including virtual work stations, computer terminals, and displays
  - EVA suit technology, including constant volume/low torque joints and dextrous gloves

- Materials
  - Carbon-based composite materials with near-zero coefficient of thermal expansion and atomic oxygen shielding
  - New lubricants, coatings, and seals

- Mechanics
  - Vibration and disturbance isolation systems

- Power
  - Large area solar cells
  - Solar dynamic power systems
  - Regenerative fuel cells, including nickel-hydrogen batteries
  - AC/DC power management systems, including 20 Khz power distribution systems

- Propulsion
  - Multi-propellant resistojet thrusters
  - Hydrogen-oxygen propulsion systems

- Structures
  - Deployable and erectable truss structures
  - Structural dynamics analysis programs
  - Structural dynamics control systems of large, flexible structure, with distributed sensing, actuators, and imbedded processors

- Thermal
  - Two Phase thermal management systems, including efficient transfer of heat over long distances

It should be noted that each of the above technology systems have a number of subsystems and components that also are candidates for use in the public and private sector.

In addition, NASA is continuing further advanced development of technologies to enhance Space Station capabilities and to enable evolution, including long-lead development activities of technologies required for Space Station support of future exploration missions. These technology developments are expected to eventually provide additional technology spin-offs.

Question 9: Is the Space Station Program the most effective utilization of the scientific and engineering resources of the United States in space, and does it ensure the close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment?

Answer 9: A permanently manned Space Station will stimulate the development of advanced technologies and provide a versatile, efficient system for space science and applications, which are both essential elements to helping develop fully the commercial potential of space. The Space Station, will provide a focal point within *P*h and the U.S. scientific community for space - based activities. Given the vast array of possible applications, Space Station resources will be allocated in a highly competitive atmosphere. This, coupled with the concepts to be developed from the Space Station's "Space Station Science Operations Management Study," completed last year should provide a solid foundation for insuring that U.S. R&D dollars and resources are utilized in an efficient manner. The Phase I Space Station is designed to evolve and grow , so that it can serve as a point of assembly, test, and departure for future space missions. It is also a vital research tool for understanding and qualifying man for extended space exploration.

Question 10: Does the Space Station Program preserve the role of the United States as a leader in space science and technology and in the application of these activities for peaceful and scientific purposes?

Answer 10: The Space Station is a leadership program that will be unique because it will provide the United States with a permanently manned presence in space. It will be versatile because its capability will be remarkably diverse. This diversity is reflected in the Station's design, which features pressurized laboratories, accommodations for attached payloads, and free flying, unmanned platforms. NASA is developing a new national laboratory -- a research center in space. The Space Station will also assure America's preeminence in space, at a time when other nations are increasingly self-reliant in Space technology, and it will support a universal vision reflected in the President's space policy that, ultimately, mankind will move beyond the confines of earth.

In the next century, people may live and work in space, mine the mountains of the moon, and explore the canyons of Mars. The Space Station program will help support such endeavors.

Question 11: I understand that the objective of NASA's University Space Research Program is to enhance and broaden the capabilities of the nation's engineering community to better participate in the space program. Could you explain the program and why you are requesting an increase of $12 million [$10 million] in FY 1989?

Answer 11: The University Space Engineering Research Program is a university-based center concept that is an integral part of the strategy to rebuild the space technology base. We are making a special effort to reach out to the university community, making a long-term commitment for engineering research that will lead to new partnerships between NASA Centers and universities as well as generate new talent and increase enthusiasm in our space program. These partnerships will provide the universities with a broad role for independent research in space engineering which will contribute innovative concepts that will enhance NASA's own visions of the civil space program.

OAST has allocated $4.0 million to initiate the program in FY 1988 to establish 8 university research centers. The FY 1989 funding is required to continue the support of the incumbent centers, as well as allow NASA to expand university participation, achieving a better technical balance and more fully satisfy program goals. The enthusiastic response from universities, both in number and in quality of the proposals demonstrates the timeliness and value of the program.

QUESTIONS SUBMITTED BY SENATOR D'AMATO

Question 1: Dr. Fletcher, you state in your testimony that this is the year for our Nation to reinvigorate its leadership in space. To this end, NASA has submitted to Congress a budget request that reflects more growth than any other NASA budget request in 20 years. What exactly will the American public see from NASA in 1989 as evidence of this so-called reinvigoration?

Answer 1: The most visible sign of the reinvigoration of the space program in 1989 will be the resumption of Shuttle flights. We plan to begin launching the Shuttle in September of this year and have 9 flights currently planned for launch in 1989. The Magellan mission to study the planet Venus and the Galileo mission to study the planet Jupiter are two of those launches and represent years of scientific preparations. The COBE Explorer mission, to study cosmic rays in space, is also scheduled for launch on an expendable launch vehicle in February 1989.

About $2.0 billion of the $2.4 billion increase requested in the FY 1989 budget request is required to continue present programs which will reap benefits in the future. These include the development of the Space Station, the support of manpower and materials required to continue the Shuttle flight schedule, the implementation of the mixed fleet of ELV's, the continuation of several important planetary and astronomical exploration missions, the replacement of the Tracking and Data Relay Satellite (TDRS) lost in the Challenger accident, development of the second TDRS ground terminal, and continuation of the technology maturation efforts on the National Aerospace Plane. These all represent high priority programs, in which NASA has made a considerable financial and human resource investment, and which in many cases are close to reaching fruition.

There is approximately $375 million included for new initiatives and augmentation. The two major development projects included are the Advanced X-ray Astrophysics Facility (AXAF) and the Advanced Solid Rocket Motor (ASRM). The AXAF, planned for launch in the mid-1990's, is the third of the Great Observatories to be developed and will provide an opportunity to detect x-rays from sources throughout the universe with an unprecedented degree of sensitivity and precision. The ASRM will enhance the flight safety, reliability and performance of the Shuttle, and will play a crucial role in NASA's plan to provide a man-tended capability early in the Space Station assembly sequence. Funding is also included to initiate the "Pathfinder" technology program, an integral part of the President's National Space Policy. This is a signficant effort to allow NASA to develop a sound technology basis for future decisions on future missions to extend human presence beyond Earth orbit into the solar system.

Question 2: In what specific ways will flight safety be enhanced by the Advanced Solid Rocket Motor.

By what margin will payload capacity be increased?

When do you expect this new technology to be ready for us on an actual Shuttle flight?

Answer 2: The enhanced safety of the Advanced Solid Rocket Motor is derived from design and processing changes that accomplish the following:

a. Elimination of factory joints and, hence, the associated Criticality 1 failure modes through use of a weldable case material.

b. Elimination of the principal leakage cause in field joints by redesign to force the joints to close, rather than open, when the motor is pressurized.

c. Elimination of all asbestos containing material. The current insulation material contains asbestos which will have to be replaced due to environmental and employee safety considerations. The ASRM allows this change to be integrated into the motor system and avoids the cost of a separate development program.

d. Elimination of joint and ablative material failure modes in the nozzle by redesign.

e. Elimination of process variability through use of automation to replace labor intensive operations and through rigorous process controls.

f. Elimination of Space Shuttle Main Engine (SSME) throttling at maximum dynamic pressure through ASRM grain design; this eliminates or reduces 175 Criticality 1/1R failure modes for the SSME and the Auxiliary Power Units.

The payload capacity is expected to be increased by 12,000 pounds, or 17 percent, leading to the equivalent of 2.4 additional missions per year (for a 14 per year launch rate).

The expectation is that the ASRM development will lead to an initial flight in 1994.

Question 3: Dr. Fletcher, in your testimony you state that NASA's budget request of $967.4 million for the Space Station will move it into a full-scale development and construction phase in 1989. As the Space Station moves into this new phase, what role will be played by the Program Support Contractor? Grumman Aerospace

Could you describe the staffing level required by the Program Support Contractor in Fiscal Year 1989?

At what point in the development of the Space Station will the activities of the Program Support Contractor reach a peak? What staff level do you estimate will be needed at this point?

Answer 3: Grumman Aerospace is playing and will continue to play a vital role in the design and development of the Space Station. Its duties and responsibilities are directly in support of the NASA Space Station Program Office and NASA Field Centers responsibilities. Grumman will provide management support to Level II program control including planning, scheduling, and data base management. Its Level II systems engineering functions include program requirements development and control, system integration verification and test analysis, utilization planning and requirements, and information systems requirements and control. Grumman will also support NASA in the extremely important areas of reliability, maintainability, and quality assurance by assisting NASA in assuring that these characteristics are built into the design and carefully monitored throughout the life of the Space Station. Grumman personnel will provide similar support to the various Work Packages Centers and will have people in residence at the centers.

In fiscal year 1989 Grumman will require a staffing level of approximately 700 people. The staffing level will peak in 1992 at a level of approximately 1260 people and this level will be maintained through 1995.

Question 4: Could you briefly describe the Stirling space engine program being conducted at NASA Lewis?

Answer 4: Work on Stirling engines for space power is being conducted under the CSTI high capacity power program and is primarily aimed at developing a Stirling engine conversion system for use with the SP-100 nuclear heat source. An industry/government team effort is building on the knowledge gained from a preliminary 25kWe engine feasibility demonstration recently completed and on Stirling engine components research conducted in FY 1986-1987. In FY 1988, a major procurement request was issued directed towards the further advancement of Stirling space engine technology; industry proposals are being evaluated currently. This four year focused technology contractual effort includes the design, fabrication, and full-range performance testing of a free-piston Stirling test bed engine capable of operating up to 1050 degrees K. For use with the high temperature (1350 K) reactor, it will be necessary to rebuild the Stirling engine using refractory metals.

Question 5: Will this program be funded under the Civil Space Technology Initiative (CSTI) program in Fiscal Year 1989 ? If so, at what level?

Answer 5: Yes. $5.5 million.

Question 6: What are the benefits (or disadvantages) of the Stirling power conversion system compared to photovoltaics, thermoelectrics, and Brayton systems?

Answer 6: In general, the free-piston Stirling power conversion system offers for space applications: high efficiency, low specific mass, long life potential, compactness, utilization versatility with either nuclear or solar heat sources. Solar photovoltaic conversion systems have demonstrated extensive space operations capability. While much lower in efficiency and having higher surface area requirements photovoltaic systems offer a weight advantage compared to solar dynamic systems for low earth orbit operations. Consideration of the use of solar dynamic systems on space station are based on the reduced area associated with dynamic systems and the operational advantages this provides. Thermoelectric conversion systems, developed for use with nuclear heat sources, are relatively low in efficiency. However, thermoelectrics have the following benefits: lower heat rejection area requirements, thereby, lower radiator system mass penalty and demonstrated long life characteristics. Brayton conversion systems can be used with either solar or nuclear heat sources and offer high efficiency, compactness, but incur (in comparison to Stirling systems) some heat rejection subsystem mass penalty due to the cycle's lower heat rejection temperature. Power system mass and performance factors are tailored for the specific space applications and all the above conversion systems have certain applications for which they are best suited.

Question 7: What cost saving could be expected if Stirling engines were employed instead of photovoltaics on the space station?

Answer 7: In contrast to photovoltaic system costs which are available, Stirling engine costs have not been established at this early stage of technology development. The Space Station decision to consider Brayton and Rankine systems for dynamic conversion was, to a great extent, based on the development risk associated with a new, more advanced technology such as Stirling. Relative to life cycle costs for Space Station operations, the Stirling conversion system should offer somewhat lower costs due to its higher performance characteristics and potential longer life, but since cost estimates have not been established for this system as a whole, it is impossible to predict whether there will be any cost savings.

Question 8: When does NASA expect to achieve a space qualified Stirling power conversion system? Could this schedule be increased with additional funds?

Answer 8: Late 1990's. The schedule would not be materially affected with additional funds.

QUESTIONS SUBMITTED BY SENATOR DOMENICI

High Resolution Solar Observatory (HRSO)

Question 1: Will you please give us a status report on the development of the high resolution solar observatory?

Answer 1. HRSO has been redefined from a Spacelab/Space Station attached payload to a free-flying Medium Launch Vehicle spacecraft payload. HRSO is being planned for sun-synchronous polar orbit and a minimum lifetime of two years. The redesign study of HRSO has been completed and includes the capability to carry two strap-on solar instruments to complement spectral coverage of the basic instrument in order to obtain information at different altitudes in the solar atmosphere. A Letter of Agreement is being prepared for the Federal Republic of Germany to provide the spectrograph, one of the basic instruments. Additionally, discussions are underway with the Air Force to provide one of the strap-on instruments and possibly the launch vehicle.

Question 2: How much of the additional $5 million that the conferees provided for spacelab/space station payload has been provided for the high resolution solar observatory?

Answer 2: Of the $5 million the conferees provided for spacelab/space station, $3 million is going to HRSO in FY 1988, which will augment the $2 million previously budgeted for a total of $5 million.

Question 3: I understand that while $3 million may have been committed to the project, $2 million has been withheld. Why has this action been taken and when do you expect to provide these funds to the HRSO?

Answer 3: A total of $5 million has been budgeted for HRSO in FY 1988 and no funding will be withheld.

Question 4: Will you provide the Subcommittee with a timetable for proceeding with the high resolution solar observatory.

Answer 4: With the completion of the redesign study of HRSO as a free-flyer, HRSO is on course to be considered as a candidate new start for the Fiscal Year 1990 budget. Whether HRSO is included in the NASA budget as a new start in Fiscal Year 1990 is dependent on the outcome of the congressional deliberations on NASA FY 1989 budget and on priorities within the Office of Space Sciences and Applications, NASA and OMB.

Question 5: Finally, how does HRSO fit in with NASA's five-year strategic plan for space science?

Answer 5: In the strategic plan for Space Science and Applications, HRSO has been identified as the number one priority for a new start in the moderate program category.

QUESTIONS SUBMITTED BY SENATOR NICKLES

Question 1: As a result of the 1986 Space Shuttle tragedy, many people have implied that safety measures were cut because of budget constraints. Do you feel that in light of continued budget constraints on NASA that the agency has worked around the constraints to assure that the highest possible measure of safety is guaranteed when the Shuttle is scheduled to launch in August?

Answer 1: The number one priority for NASA has always been to return the Shuttle to flight status with the greatest assurance of safety that is practical. As you know, after the Shuttle tragedy, NASA established the Office of Safety, Reliability, Maintainability and Quality Assurance with the purpose of strengthening SRM&QA to the point of becoming a major discipline throughout the agency. Since January 1986, we have been able to increase the number of NASA personnel directly assigned to SRM&QA functions by approximately 30 percent. There are now over 1100 NASA civil service employees in the total NASA SRM&QA work force with an additional 5650 equivalent positions in SRM&QA being supplied by support contractors, major component contractors and the Department of Defense (DOD). It is our intent to continue to promote safety and quality throughout the agency and to take those actions necessary to assure mission success in the future. The flight of the Shuttle in August will be the most closely scrutinized mission ever made by NASA with safety being the uppermost concern. We do not intend to let budget constraints dictate limitations on the functions carried out by the SRM&QA community. Historically, NASA received its requested level for Shuttle development in the President's request to Congress.

Question 2: The Administration, in its budget request, has called for a 20 percent increase in the NASA budget from $8.5 billion this year to $10.2 billion next year. Is this significant increase justified and can NASA start up the Space Station, effectively continue Shuttle flights and start up the Advanced X-Ray Astrophysics Facility (AXAF) project on this budget?

Answer 2: About $2 billion of the $2.4 billion increase requested for FY 1989 is for continuing activities approved by Congress in FY 1988. These activities include completion of the Shuttle recovery efforts and the preparation for resumption of flights, the development of the Space Station, implementation of the mixed fleet of expendable launch vehicles, the launch of several major Space Science missions, replacement of the Tracking and Data Relay Satellite (TDRS) lost in the Challenger accident, development of the second TDRS ground terminal, and continuation of the technology maturation efforts on the National Aerospace Plane. The remainder of the increase is included for new initiatives and augmentations. These new efforts include the Advanced X-Ray Astrophysics Facility (AXAF), the Advanced Solid Rocket Motor, the Pathfinder technology development program, and augmentation in aeronautics and enhanced institutional capabilities.

This budget should be characterized as a recovery budget and will enable the United States' space program to resume launching activities and point towards a leadership position. The new activities included are important activities to maintaining the position of this country in its leadership role. The outyear funding needed to implement these activities remains at approximately the FY 1989 level in constant dollars, and involves slightly less than 1 percent of the entire federal budget.

Question 3: It is my understanding that many oil service firms have been looking to expand their use of down-hole and offshore experience to apply to space activities. To your knowledge, are there significant opportunities for such firms in working with NASA and reapplying their technology?

Answer 3: Down-hole and offshore oil technology and experience are relevant to future NASA space operations activities. NASA has initiated research and systems analysis activities with the U.S. Navy and firms providing underwater offshore oil services to gain insights from their experience with remote underwater teleoperated operations. This technology and experience base is being applied to our space robotics research and in the design of "robot friendly" hardware.

Under NASA's FY 1989 Pathfinder technology project, NASA is proposing to initiate new research efforts in autonomous rover and sample acquisition and analysis capability that may benefit from experiences and technologies developed by the down-hole oil service industry. A major objective of these research programs will be to provide the technological capability to perform automated *in situ* science analysis on a potential planetary rover vehicle, including the ability to extract and analyze sub-surface core samples. The initiation of this research will depend on the level of funding authorized and appropriated for Project Pathfinder.

QUESTIONS SUBMITTED BY SENATOR BYRD

ADANET, West Virginia

The ADANET program is an advanced, commercial development network for Ada software engineering applications, centered in Morgantown, West Virginia. This effort receives funding primarily from NASA, which provided contract support in the amount of $1.3 million in Fiscal Year 1988. I believe that this is a valuable resource, which has the purpose of stimulating the reuse of Ada software applications which have already been paid for by the taxpayers. Applications would be in the commercial manufacturing, automation, and robotics sectors, with a view to eliminating duplication and overlap of software program efforts by government and industry. I am advised that, unfortunately, the Fiscal Year 1989 President's budget does not include the $2.7 million needed to continue this effort.

Question 1: Please provide for the record the benefits of this effort, including examples.

Answer 1: AdaNET is intended to be a self-supporting commercial organization to provide the Ada community information sharing and depository services. It will operate on a for-profit basis recovering costs through charges levied for services offered. Access to all services will be made available electronically through network services provided as part of commercial agreements.

When fully implemented, multiple services will be offered as part of AdaNET operations. One service will be to provide access to a repository of Ada software utilities, components, and tools. The repository's services will include:

a. Standardization of documentation accompanying each repository entry,

b. Entries organized according to definitive taxonomic schemes,

c. Metric information accompanying each repository entry,

d. A mechanism for accepting and reviewing user experience with the repository components,

e. Analysis, documentation, and decomposition of larger systems into reusable components, and

f. Data base management support allowing keyword searches as well as intelligent matching of user requirements to the existing component level.

Question 2: What can be done to assure the continued funding of this project in Fiscal Year 1989 and beyond?

Answer 2: NASA supports the AdaNET initiative in West Virginia. As a result of the initial support provided by NASA and DOD to this effort during Phase 1, AdaNET has begun to generate substantial, positive feedback from online users which demonstrates the program's potential for cost-effectiveness and qualitative benefits. Depending upon final appropriations action on the FY 1989 NASA budget, NASA intends to apply $2.7 million in FY 1989 to this program, in addition to $1.3 million NASA has reallocated for FY 1988 AdaNET program activities. NASA's current budgetary planning does not include provision for continued funding of this program beyond FY 1989. Any NASA funding beyond FY 1989 would depend upon receipt of an acceptable cost-sharing plan.

Question 3: Within the overall Fiscal Year 1989 budget of $11.5 billion, is it not possible to find an amount of $2.7 million to transfer to the $20 million budget of NASA's Technology Utilization Directorate in the Office of Commercial Programs in order to continue this valuable national resource?

Answer 3: As mentioned in the above response, NASA is already taking steps to encourage continuity of the AdaNET project by planning to identify $2.7 million in FY 1989 for this project within a budget already constrained by ongoing agency programs. NASA will explore ways to contribute to the continuation of the AdaNET activity, contingent upon appropriate cost-sharing planning, and recognizing that it must compete with other high priority and merit reviewed programs.

Question 4: If the necessary $2.7 million is made available for Fiscal Year 1989, how, specifically, would the funds be used?

Answer 4: If the stated $2.7 million were made available in FY 1989 for the AdaNET project from sources other than NASA, these funds would be used primarily for acquisition of large scale data storage machines, staff augmentation to support major services areas, and telecommunications support for connections into federally-supported programs that may interact with AdaNET. Material of interest, such as software in other proprietary repositories or software written in languages other than Ada, would be researched. Information of interest, but deemed not appropriate for inclusion in this repository, would be referred to its source as part of the repositories services. Where possible, network linkages would be established with other commercial entities to facilitate access by users. An additional service would be the support of an information clearinghouse for topics directly and indirectly related to "Ada." A wide range of information considered useful to Ada users would be gathered, organized, and placed on-line, including:

a. Information concerning currently available Ada compilers,

b. Reviews and classification of Ada related tools, component libraries, and programming design languages,

c. Vendor posted material describing products and services offered, and

d. Staff-gathered announcements relating to activities in the Ada community.

Users would be able to communicate in several ways with other participating users or groups. Some of the channels of communication which could be provided are:

a. User mail capabilities directed toward individuals as well as organizations,

b. Open forum discussions on topics of interest,

c. Announcements from individuals and organizations concerning contracting opportunities, projects in progress, and professional positions available, and

d. On-line vendor support channels.

The commercial success of this organization would be promoted in several ways. Publicity for the operations of the organization would be provided by news releases. An internal newsletter detailing current and proposed services, announcements, and upcoming events would be widely circulated. An active, ongoing campaign to involve vendors of products and services would be pursued.

The end result of AdaNET would be to provide a valuable and self-supporting resource to the rapidly growing Ada community. This resource will further promote and support the transition to the use of Ada software which is seen as an important catalyst in the effort to improve productivity and cost management.

Question 5: National Technology Transfer Center (NTTC), West Virginia. NTTC is based in West Virginia. It will provide "one-stop shopping" for businesses, governmental agencies, and U.S. scientists to secure access to federally-funded and -developed technologies. The intent is to stimulate the reuse of technology, which has already been paid for by the taxpayers, into profitable, commercial uses, such as the accelerated transfer of aerospace technology into nonaerospace areas such as biomedical research. The result is intended to enhance U.S. productivity through manufacturing innovations and, thus, to improve overall national competitiveness.

Please provide for the record the benefits of this effort, including examples.

Answer 5: An NTTC based in West Virginia does not exist at this time. The proposed NTTC is planned to serve as a "one-stop shop" for America's entrepreneurs, small businesses, large businesses, and scientists and engineers from federal laboratories. The NTTC is planned to feature a nationally-integrated relational data base which will enhance the technology transfer functions of NASA, Department of Commerce, Department of Energy, Strategic Defense Initiative Organization (SDIO), the three military services, and other interested federal agencies. Designed to provide the widest possible span of users with a single focal point to access any and all relevant federally-funded, transferable technologies, NTTC is envisioned to specifically:

a. Maximize the rate and numbers of successful transfers,

b. Eliminate data base/information source redundancy and inefficiencies,

c. Connect, capture, and exploit the "entrepreneurial moment," when technology is successfully transferred to the competitive marketplace, and

d. Help to develop and re-create the U.S. industrial base in addition to enhancing U.S. industrial competitiveness.

These efforts are intended to result in a national network which would combine in some cases and enhance in other respects, the field installation outreach of NASA's Technology Utilization Program, the research and development resources of the Federal Laboratory Consortium data bases, and the advanced software properties and referral characteristics of SDIO's Office of Civil Applications, and would constitute a unique resource for providing a potential entrepreneur with time and cost savings along with marketable insights and potential products.

Question 6: What can be done to assure the continued funding of this project in Fiscal Year 1989 and beyond?

Answer 6: As you know, NASA had proposed a reallocation of $1.2 million in FY 1988 funds for this project, which was rejected by the House Appropriations Committee. Depending upon final appropriations action on the FY 1989 budget, however, NASA currently plans to identify $1.2 million in FY 1989 funds for definition of the NTTC. NASA has no plans for funding of NTTC beyond FY 1989. Any future NASA funding would depend on the results of the definition activity, and receipt of an acceptable cost-sharing plan, with the preponderance of support coming from non-Federal sources.

Question 7: Within the overall Fiscal Year 1989 NASA budget of $11.5 billion, why would it not be possible to find an amount of $4.0 million to transfer to the $20 million budget of NASA's Technology Utilization Directorate in the Office of Commercial Programs in order to continue this valuable national resource? I strongly believe that a way must be found to continue this valuable effort.

Answer 7: The current NASA budget plans for fiscal year 1989 do not include provision of $4.0 million for NTTC. As stated earlier, NASA plans to identify $1.2 million for definition of the NTTC during fiscal year 1989. Since NASA believes that the NTTC concept is worthy and could enhance U.S. industrial strength and technical capability, NASA will evaluate future funding based upon results of definition, cost-sharing proposals, and competition with other high prioritized and merit-reviewed programs.

Question 8: If the necessary $4.0 million is made available for Fiscal Year 1989, how, specifically, would the funds be used?

Answer 8: Because definition has not yet begun, $4.0 million could not be efficiently expended in FY 1989. Following definition, the logical next step would be to:

a. Create a relational data base design and implement that design,

b. Design and build a model NTTC,

c. Establish universal (national) access to the newly created national data base repository,

d. Integrate existing federal technology transfer data bases,

e. Integrate appropriate State technology transfer activities, and

f. Integrate private sector commercial/financial services to support new processed and to further develop new products.

QUESTIONS SUBMITTED BY SENATOR BINGAMAN

National Technology Transfer Network

Senator Byrd has helped to initiate a National Technology Transfer Center based in West Virginia. The purpose is to provide better access to federally-funded technologies for the private sector and government agencies themselves. I fully agree that this is a potentially very effective mechanism for spurring innovations, enhancing productivity, and improving our national competitiveness.

Indeed, I would propose that this Center become the hub of a network of similar centers located strategically around the United States. I believe that Albuquerque would be an ideal site for a Southwestern center because of the federal R&D resources situated along the Rio Grande Corridor.

Question 1: Please provide for the record the potential benefits of a second technology transfer center in the Southwest.

Answer 1: The benefits of a second technology transfer center located in the Southwest could provide for a substantially expanded and complementary network together with a data base similar to the envisioned prototype West Virginia model. This second center could probably be linked to a large array of NASA Industrial Applications Centers and field installations, and government research laboratories, particularly the Department of Energy national laboratories. These linkages could have the effect of greatly expanding the nationally integrated technology transfer data base from its initial prototype in the West Virginia Center. However, it is important to remember that the West Virginia Center is only a prototype. We have a lot to learn about their operation and effectiveness before we expand the number of centers. In addition, the location and support for centers must be based on merit and need since they must compete with other high priority programs.

Question 2: How much funding would be needed to start up a second center in fiscal year 1989? Would $4 million be approximately correct assuming the second center could take advantage of some of the experience already accumulated in starting up the West Virginia center?

Answer 2: Based on the envisioned West Virginia/East Coast prototype, $4 million in FY 1989 funding would be sufficient to begin designing and implementing the core national technology transfer relational data base into a Southwest regional center.

Question 3: If $4 million were made available for a second center in fiscal year 1989, how, specifically, would the funds be used?

Answer 3: A Southwest regional center could be established comparable in design to that of the envisioned West Virginia/East Coast prototype, providing resources to integrate the software, hardware, and communications capabilities with additional research laboratories, States' agency programs, NASA Technology Applications Centers, and field installations, and other federal technology transfer networks. The funds would also stimulate integration of private capital sources to assure financial support for federally transferable technologies and to assure that the Southwest center, like the West Virginia center, would become self-sustaining in future years.

SUBCOMMITTEE RECESS

Senator PROXMIRE. The subcommittee will stand in recess until tomorrow at 10 a.m., when we will continue to take testimony from the National Aeronautics and Space Administration. The hearing will take place in room S–126 in the Capitol.

[Whereupon, at 12:10 a.m. Tuesday, March 29, the subcommittee was recessed to reconvene at 10 a.m. Wednesday, March 30.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND CERTAIN INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

WEDNESDAY, MARCH 30, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10 a.m. in room S–126, the Capitol, Hon. William Proxmire (chairman) presiding.

Present: Senators Proxmire, Garn, D'Amato, and Grassley.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

STATEMENT OF JAMES C. FLETCHER, ADMINISTRATOR

ACCOMPANIED BY:

- **DR. LENNARD FISK, ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE SCIENCE AND APPLICATIONS**
- **THOMAS CAMPBELL, COMPTROLLER**
- **DR. WILLIAM F. BALLHAUS, JR., ASSOCIATE ADMINISTRATOR FOR AERONAUTICS AND SPACE TECHNOLOGY**
- **DR. FRANKLIN D. MARTIN, DEPUTY ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE STATION**
- **REAR ADM. RICHARD TRULY, ASSOCIATE ADMINISTRATOR, OFFICE OF SPACE FLIGHT**

SPACE STATION USERS

Senator PROXMIRE. Dr. Fletcher, this is a continuation of yesterday's hearing, as you know. It is a little more intimate and convenient.

Last November, NASA held a meeting of potential space station users in Nashville. A report on that meeting quoted Louis Lanzerotti of Bell Labs as saying, and I quote:

> Fifteen years ago, NASA oversold the shuttle on the basis of its commercial potential. They'll do themselves in with the station if they try to sell it on the basis of its suitability to do manufacturing in space.

The article went on to say that other researchers were equally critical and indicated that a director of Abbott Laboratories' corporate molecular biology program said there is a general feeling in the industry that space is not a productive place to do research.

How do you respond to these criticisms?

RESEARCH IN SPACE

Dr. Fletcher. I think it is two separate parts of that question, Mr. Chairman. The first part has to do with the commercial potential of space, and the other part has to do with not being able to do research in space. I would like to talk not about being able to do research in space first, because I think that is a very wrong misconception.

I think there are a great many kinds of scientific research that can only be done in space, and when I say "can only," nobody has been able to figure out a way to do it except in space.

That has to do with the whole category of things called microgravity. This includes life science research, which includes separation of biological materials. It includes such things as protein crystal growth, which you cannot do under 1 G. It includes things which are maybe oversold but, nevertheless very important, the making of pure semiconductors, new alloys.

We have seven different disciplines within that microgravity category, all of which have to do with research. On the first part of the statement, it is not clear what the commercial value of space is. That is probably right. There are a lot of people that are betting on the outcome, so to speak; they are betting that some of this microgravity research might pay off in terms of new medicines and new materials. I think the jury is out on that.

We had some good experience early on, and Jim Rose is going to expand on that, with some pharmaceutical companies, where biological materials were actually manufactured in space and were useful, but I think it still is not there yet, and we have got to do a lot more research. Whether it is oversold or not, I have to take the fifth. I wasn't here, so I don't really know about that. I am not overselling it now.

MAN-TENDED STATION

Senator Proxmire. Well, you make a very convincing case, but there are some kinds of processes that can only go forward in a space environment, and we haven't figured out a way of nullifying gravity. How about the man-tended station, however? That is an alternative that seems a whale of a lot less expensive and is practical and is oriented toward industry; it would be strictly for this purpose, and why won't that take care of it?

Dr. Fletcher. A man-tended space station would have a lot of value. I am not talking about the commercially-developed space facility but a man-tended space station of the size and power that we are talking about.

Senator Proxmire. The kind that the Houston people are working on?

Dr. Fletcher. Well, the Houston people are two things. One is the Johnson Space Center, who are working on the real station, and then there is another group.

Senator Proxmire. I was talking about the unreal space station.

Dr. Fletcher. That is a much smaller device, much lower power and so forth, and for microgravity that doesn't require man-tending, that is all right. But we don't see the value of it yet. But there may be some commercial value for free flying, for actually manufacturing materials in space.

But on the other hand, that is a commercial question, a marketing question. There are other people out there that want to use it for manufacturing in space, and the Texas company that you referred to believes that there is, but not enough to pay for the whole thing, so they asked NASA to sign up for doing some of the research that I talked about.

As a matter of fact, that is what we are in the process of negotiating with various committees of the Congress to see if we can't be half and half; half commercial and half government use.

SPACE-BASED LABORATORY

Senator PROXMIRE. Maybe I should follow up with what Mr. Fox said after he said, there is a general feeling in his industry that space is not a productive place to do research.

He said:

> It is not cost effective relative to the frequency of flights; allows no responsiveness to market pressures. Protein crystallization is perhaps the most promising activity for a space-based lab, but a ground-based technique called molecular resonance is the best way to determine a substance's molecular structure and may be even better.

Dr. FLETCHER. I can't comment—maybe Dr. Fisk can—on the competitive process for protein crystal growth. I do know that in space you can grow protein crystals rather well, and it has been done. It needs a lot more experience before we can, we think, make them commercially.

On the other hand, that is, Mr. Chairman, a very active field of research. In fact, the whole materials processing industry is a growth industry, and if we can make breakthroughs in space, it is worth the investment.

Dr. FISK. The use of protein crystal growth is, briefly, getting a sample of sufficient size in order to be able to measure the crystal structure.

In a 1 G environment, you really can't grow anything very big. Because of the convection currents, the temperature difference and gravity essentially leaves too small of a sample to analyze. In the zero environment, we are allowed to grow something of sufficient size with very conventional techniques in order to understand what the crystal structure is. So we view it as a very promising area.

I think the key point is, as the man in the article pointed out, the access to space so as to be able to do these measurements on a routine basis. Hopefully, what you get with the series of spacelab missions coming up and eventually the space station itself is that routine access. We think that the possibilities for growth in this industry and for research results which have immediate applications to other industries is very promising. It is the key. The key issue is being able to get there and do it frequently.

MARS OBSERVER PROGRAM

Senator **Proxmire**. Dr. Fletcher, you are requesting $102 million for the Mars Observer Program in fiscal year 1989. That is an increase of $48 million over the current budget. Your latest project status report on the Mars Observer Program indicates there has been growth in spacecraft costs of about $70 million since your last report due to the provision of spares. Can you tell us why the spares requirement was not built into your earlier estimates?

Dr. **Fletcher**. I will have to defer to Len Fisk on that one.

Dr. **Fisk**. Briefly, on the Mars Observer, it was originally designed as a planetary observer. The thought was that there would be a line of planetary observers, so it was not necessary to buy spares for one because there would be one coming along right after it. For various reasons perceived by Dr. Fletcher and I, that planetary observer line was never established, so the Mars Observer started out simply as a single new start above which there is not an adequate number of spares in it.

I think the way it is designed at the moment is actually a very clever way, because not only would the spares be very useful for keeping it on schedule and making it a very special mission, but if the mission goes off successfully, then you have essentially acquired a full set of spares which would lead, naturally, into the next planetary observer mission.

Senator **Proxmire**. Would the first approach have been more economical? There is a very large increase.

Dr. **Fisk**. Well, you would have had to pay for the spares, but the original thought was sort of a line item program for Mars, for the planetary observer line, not unlike the explorer-observer line, so you establish a constant budget level and started one mission as you came down off the cost of the preceding mission. The total cost would have been the same if you had to buy the spares.

Dr. **Fletcher**. Mr. Chairman, I think it is important to point out, though, that those spares that have been added are useful. If not used on the Mars Observer, they can be used on other flights such as a lunar polar orbiter, so it is not wasted money.

DUAL CAPABILITY

Senator **Proxmire**. You also indicated there has been upper-stage cost growth increases of about $26 million due to modifications so that the spacecraft is compatible to the Titan III. This committee directed you to study the dual compatibility issue and to provide us with a report on technical and production costs associated with it.

I assume that part of the cost would be the $26 million I just mentioned, and the other part would be the cost of a Titan III; I guess around $185 million.

Are there any other costs of moving the Mars Observer mission to an expendable that we have overlooked?

Dr. **Fletcher**. I think that is the total, Mr. Chairman. We think that there is one that can be dual-compatible, and the costs for making it that way, so far, at least for the next year or two, is minimal, less than $2 or $3 million.

EXPENDABLE LAUNCH VEHICLES

Senator PROXMIRE. You are requesting $195 million for expendable launch vehicles in 1989. How much of that total would be spent on initial acquisition costs of Titan III for the Mars Observer mission?

Mr. CAMPBELL. Fifteen.

Dr. FLETCHER. Fifteen?

Mr. CAMPBELL. Fifteen.

Senator PROXMIRE. You see, my problem is that I am not at all sure that we have the $210 million or so it would cost to fly the Mars Observer on an expendable rather than a shuttle with the fixed system costs.

How would the Mars Observer Program be affected if we told you not to proceed with the expendable option?

Dr. FLETCHER. Well, if we were told that, we could fly it on the shuttle. But on the other hand, Mr. Chairman, the idea of a mixed fleet is so that if one part of the fleet, such as the shuttle, is down for whatever reason, we have an alternate way of launching. So part of the reason for buying those expendable launch systems is to give us a more robust transportation capability. The whole idea of a mixed fleet is just that.

So if we don't buy the Titan IIIs for the Mars Observer, we buy them for the TV source or some other part of the space program. I think that is a healthy way too proceed. We should not try, as you indicated yesterday, to put all our eggs in one basket.

Senator PROXMIRE. It is healthy if we have the money.

Dr. FLETCHER. It does cost more money, as we have discussed over the years, to have a mixed fleet. If you put all your eggs in one basket, it is the cheapest way to go, though I don't think it is the safest way to go, especially if you have an accident like we did.

ADVANCED X-RAY ASTROPHYSICS FACILITY

Senator PROXMIRE. Dr. Fisk, you are requesting $27 million in 1989 to initiate an Advanced X-Ray Astrophysics Facility Development Program. It is part of the proposed $791 million physics and astronomy budget. What would be the total cost of the AXAF project?

Dr. FISK. In outyear dollars it is $1.5 billion; in constant 1988 dollars, it is $1.1 billion.

Senator PROXMIRE. I have other questions.

Senator Garn?

ELV'S VERSUS MANNED ORBITERS

Senator GARN. Thank you, Mr. Chairman. I will just make a comment on your line of questioning vis-a-vis the shuttle. That is exactly the major source of criticism after the accident, when DOD couldn't put up their priority cargos and so on, because we have gone through this game once before.

We didn't give NASA the money to have a mixed fleet. If there is anything we should have learned from the *Challenger* accident as far as delivery in space, it is that we must have a mix of ELV's versus manned orbiters.

I can't tell you how much flack I have personally taken over that issue of, "Why didn't you have more ELV's?"

Well, I can get out of that easily, because I wasn't here at the time when they were making those decisions. I have to explain the time frame in my Senate career, but nevertheless, it is highly important, particularly when you are only going to have four orbiters.

I never believed that NASA was capable of keeping their launch schedule with four orbiters. I thought we needed five years and years ago. But then talking about 24 launches per year with four orbiters was simply not achievable. That is why I turned out to be right. So with three orbiters and not having a fourth one, some years down the line it makes it all the more important that we have some ELV's if we don't want to go to Ariane and Russians and other places to launch satellites.

ADVANCED LAUNCH SYSTEM

Dr. Fletcher, I know that Dale Myers has been managing the ALS program. It is my understanding that they have not transferred the funds both from last year's supplemental from DOD and that they finally have been released. Is that correct?

Dr. FLETCHER. I am not sure about that.

Mr. CAMPBELL. We have the $38 million in 1987 funds transferred, Senator Garn. We don't have the full release yet from the House, as I understand it. I am still waiting for release from the House to apply those funds.

Senator GARN. Could you describe for us what the ALS is now directed toward, where the program is going?

Dr. FLETCHER. I can probably do that, Senator Garn.

The ALS is an advanced launch system, primarily designed to lift much heavier payloads than the shuttle, typically, three or four times as large. Both the Defense Department, for its own purposes, and NASA, for reasons of going back to Mars some day or going to establish a base on the Moon or a lot of other scientific payloads, does also need a heavy-lift launch vehicle.

The purpose of the advanced launch system is to not only lift heavier payloads, because we could do that with the Shuttle C, that is, the shuttle-derived vehicle, but also to reduce the cost of launch, because that is an important factor for both of us, probably more important for the Defense Department since they have in mind many, many tons of things being put into space, and we have less ambitious programs.

But even going to Mars would require an advanced launch system. So we have made an agreement with the Defense Department, signed by the President, to actually go ahead and develop that. NASA's responsibility will be for the engines, both the cryogenic and the hydrocarbon engines. We will be doing the technology development first, and finally, the development of that engine.

We will also participate in the systems design of the advanced launch system. We and the Defense Department have been studying that for 2 years, and we have a lot to contribute in the systems area, but they would have the primary responsibility for the system, and also they will have the responsibility for funding the program as it presently stands.

Senator GARN. Except that you are reprogramming, you said, some supplemental funds?

Dr. FLETCHER. There are some supplemental NASA funds for, primarily, technology in propulsion related to the ALS, and those funds were available last year.

I don't remember how much.

Mr. CAMPBELL. It is $38 million in the 1987 supplemental. It was applied to ALS and transferred to it, and we will release those funds as soon as the program is cleared.

CIVIL SPACE TECHNOLOGY INITIATIVE

Senator GARN. We reduced funding for the CSTI, civil space technology initiative, on the expectation that Defense funds would be posted in research and development. Further DOD funds were made available. Do we continue to expect offsetting and reductions?

Dr. FLETCHER. Well, I think betting on the future is a little hard, but I think the CSTI reduction was made with two purposes in mind, not just the ALS funding, but really, we were trying to fit the budget, you and we, were trying to fit the budget into a new budget ceiling which we had to deal with last year.

That was probably the main reason for the CSTI reduction.

Mr. CAMPBELL. Well, the CSTI reduction was based on an overlap in technology base. But we have segregated the amounts now, so that the CSTI request in 1989 is clear of ALS activity. The ALS activity has been transferred under the direction of Admiral Truly, and all the funds will be forthcoming from the DOD, I believe, by the transfer mode.

SHUTTLE C PROGRAM

Senator GARN. It is my understanding that NASA did seek funding through OMB for Shuttle C but that there was nothing in the request from the President to cover that. What is the the status of the program?

Dr. FLETCHER. Well, the Shuttle C is in a study mode at the moment. We feel very strongly, Senator Garn, that the Shuttle C would be a very valuable thing for this country. The Russians have a heavy lift launch vehicle, and they launched only one launch, but we expect at least one more this year.

We ought to be developing that capability much sooner than the advanced launch system. So we press rather strongly for a continuation of the Shuttle C in more of a development mode.

We did receive money for Shuttle C studies in fiscal year 1988, and those studies are underway as a part of the ALS program. But, in order to fit the budget into the overall $11.5 billion NASA request, we had to agree to the elimination of the Shuttle C money for fiscal year 1989.

Tommy?

Mr. CAMPBELL. Let me just clarify the 1988 status, Senator Garn. We have no funding to carry forward the Shuttle C studies. We had funded all of that in 1987. We reserved about $10 million to continue the studies in our 1988 program, because the responsibility of the ALS and Shuttle C is now considered by the administration under the ALS executive committee. Because of the management responsibility for ALS residing in DOD, we have been required to coordinate the Shuttle C study extension with the DOD and the OMB, and we are in the process of, I hope, completing that.

Senator GARN. With a specific launch system being eliminated from ALS, doesn't that make Shuttle C even more important?

Dr. FLETCHER. I think that Shuttle C is very important, and if there were enough money to fund all of our programs, we would certainly want to go ahead with the Shuttle C. I have made that strong plea in the White House, and many of the folks agreed.

But we just figured with a $2.5 billion increase, we better drop something, and that is what was dropped.

OMB BUDGET ALLOCATIONS

Senator GARN. This is a question that you cannot answer, because I have never been able to answer it. I don't understand, when you have an agency that has the technical experts that makes a request to OMB, I can't understand how OMB can say, "This is all the money you are going to get, but where is the expertise down in OMB? Where are the space experts that decide you are requesting Shuttle C funds but they decided not to include them?"

I know that is an unanswerable question. It happens to me in all sorts of areas. OMB is an amazing agency. They know about housing; they know about space; they know about defense; they know about everything in the world. They are a bunch of damn pencil pushers is what they are, bean counters down there. I just don't understand. It would seem to me that their job would be, "OK, you are only to get so much at NASA, but if you want to build a Shuttle C or go into the development phase," but when you make that request and then they turn you down, I just don't understand the process down there.

Dr. FLETCHER. In all fairness, Senator Garn, this was more than OMB. We discussed it at some length with the National Security Adviser and members of the National Security Council, including Frank Carlucci.

Frank was sympathetic to going ahead with the Shuttle C, but the immediate need was apparent between Frank and his colleagues, and there are some space experts on the NSC staff. Your point is well taken. It is a good program.

By the way, Frank also agreed that it was a good program.

Senator GARN. You can be nice to OMB if you would like to. [Laughter.]

I don't have to be. [Laughter.]

Thank you, Mr. Chairman. My time is up.

HUBBLE SPACE TELESCOPE

Senator PROXMIRE. Dr. Fletcher, you plan to launch the Hubble Space Telescope in June of next year; is that right?

Dr. FLETCHER. I think that is the target date, yes.

Senator PROXMIRE. In your justifications you talk about the need for flying AXAF in concert with the Hubble Space Telescope so that AXAF can observe the x-ray region of the universe while Hubble observes the universe in visible and ultraviolet radiation.

Dr. FLETCHER. That is right, Mr. Chairman.

Senator PROXMIRE. Wouldn't it make sense to get some experience with the Hubble Telescope before we get experience with the AXAF? That way we might discover some of the technical problems AXAF will have before we commit development dollars.

Dr. FLETCHER. Mr. Chairman, that really is going to happen, because we are starting AXAF at a very slow rate. We will learn a lot from the Hubble Space Telescope before we get into the large expenditures for the AXAF.

Senator PROXMIRE. Can you turn that program off?

Once you get underway, doesn't it have momentum that makes it hard to change?

Dr. FLETCHER. I think turning it off would be a bad thing, but changing it, I think, at this stage, particularly in terms of the auxiliary equipment, in terms of the main telescope facility, AXAF that has really been underway for some years now, and it takes very fancy reflecting and licenses for x-ray focusing. That has been underway, partly, in Switzerland, is it? Anyway, in Europe.

So that momentum would be very hard to turn off. But the AXAF itself, we could do a lot of things with the spacecraft based on what we have learned from the space telescope, but it is not going to be available for flight until 1993 or 1994.

Dr. FISK. 1995.

Dr. FLETCHER. 1995, so we have got 7 years if we need them between that.

ADVANCED X-RAY ASTROPHYSICS FACILITY

Senator PROXMIRE. I propose the fancy reflector. In discussing your AXAF preparatory program, you indicate that you have already fabricated the finest x-ray mirror ever built. Can you give me your rationale for producing such sophisticated hardware in your definition phase?

Dr. FLETCHER. I think Dr. Fisk ought to answer that.

Dr. FISK. The mirror is a driving technology, in AXAF, as you correctly pointed out. Three things have happened to give us confidence that we have this program in control and that there will not be the kinds of problems that occurred in the HST.

One is that it is an extension and expansion of the mirror that was used on the HEAO Einstein Observatory. It is the same concept, the same technology. It is simply bigger and the polishing is finer.

Second, we have spent approximately $160 million of both NASA money and contractor money, including civil service time, on technical development of this program, ranging from about 1981 until the present, which has allowed us to build a prototype mirror that can be calibrated and exhibit the kind of properties we expect to find in AXAF.

The third point is that the program starts as a phased technology development. We started at $27 million, ramping up to about $70 million in the second year. Most of that money is to develop the mirror. There is a debate that essentially occurs in the third year of the program that says, "Do we have this mirror sufficiently well built, actually fabricated, to justify the bringing on of the work force of the general contractor? Because that is where you always get the cost overruns."

If you have a technology problem and you have your work force in place, then the work force gives you a financial problem. So we will not bring on the work force of the main contractor until the technology is safely in hand.

Senator PROXMIRE. I understand that the final AXAF mirror has to be ground to a tolerance of one-half arc second.

Dr. FISK. That is correct.

Senator PROXMIRE. How close to that tolerance is the mirror you have already fabricated?

Dr. FISK. I am not sure I know the answer to that, sir.

Senator PROXMIRE. Let us know for the record.

Dr. FISK. I will.

[The information follows:]

ADVANCED X-RAY ASTROPHYSICS FACILITY

The resolution for the AXAF mirrors and the mirrors already fabricated (technology mirror assembly [TMA] is 0.5 arc seconds.

There are several ways of stating the specifications for the AXAF flight mirrors. One measure which is often quoted, is the angular resolution of the mirrors, measured in terms of arc seconds. The specification for the AXAF flight mirrors is 0.5 arc seconds full width at half maximum. This means that the concentration of the x-rays at the mirror focus is such that the intensity falls below half the maximum intensity outside a circle of 0.5 arc second diameter. This specification results in an x-ray telescope that is able to distinguish adjacent point sources that are 0.5 arc seconds apart.

To demonstrate the ability to fabricate mirrors to these specifications, NASA initiated a TMA program in 1982. The mirror specifications for this program were equivalent to those established as the goals. This mirror pair was slightly smaller in diameter to the innermost AXAF mirror and about one-half its length. The measured/calculated resolution of this mirror was indeed 0.5 arc seconds which demonstrates our ability of meeting the AXAF specifications.

Dr. FISK. If I can expand on one point on that, you should remember that the resolution per second, which was intended a half-arc second, as I should point out, that the comparable resolution on the HST is one-one-hundredth of 1 second. One of the reasons that we don't feel AXAF is going to be the challenge that HST was is that the type of resolution that we need for major breakthroughs in the AXAF astronomy is substantially more porous, less demanding than the kind of resolution that you needed for breakthroughs in optical settings.

AXAF COMPETITION

Senator Proxmire. I understand that there is only one contractor who has the capabilities for grinding the AXAF. Does that lack of competition concern you?

Dr. Fisk. It does, and let me just briefly touch on that. NASA made a considerable effort, running from about 1981 to the present, to generate competition in this area. We had an RFP that went out to several contractors to participate in the TMA development, development of the mirror technology.

Several companies bid. NASA funded them to begin to develop this activity. The final result was that only one contractor succeeded in generating the mirror that met the requirements for AXAF. What we have to do, I think, in order to protect the contractor in this case is to write a very stringent contractual arrangement with the one contractor that is capable of doing this in order that we do not have this lack of competition causing us a problem.

We are under active discussions at the moment on the best way to do this in order to be assured that the lack of competition doesn't cause the government problems.

Senator Proxmire. I think that is very wise, but I would hope that you wouldn't give up on developing other competitors, if you possibly can.

Dr. Fisk. We are trying. One of our concerns is that the only competitor that really exists in this field is overseas. We are really anxious to try and have American companies have this technology.

Senator Proxmire. I love our country, but it seems to me that it might be a healthy thing. Are there military implications involved here?

Dr. Fisk. I think there are some very interesting spinoffs involved in this. I will just give you one brief example. It is the process of lithography in high-density chips, an x-ray mirror that focuses a parallel beam of x-ray coming from the celestial source on to the focal point where you are going to make the measurements. If you run that backwards and have an x-ray source at the focal point in mirror technology, that produces a parallel beam of x-rays going out which is very useful in making very high-density chips. So this technology would be very useful in the area of integrated circuits.

INFORMATION SYSTEM MANAGEMENT FUNCTION

Senator Proxmire. Dr. Fletcher, last September you announced that reorganization of your Office of Space Sciences and Applications which, among other changes, merged your Information Systems Office with the Communications Division.

In June of last year, a committee of the National Research Council [NRC], recommended, as part of a report on NASA information systems, that the information systems management function should be placed at a senior management level, coequal with the program directors with line responsibilities and budget authority derived in part from them and in part independently.

The report noted, and I quote now:

> If such an approach were to be taken, a statement of commitment will have been made as to the relative importance of information resources within the organization and at a level understood by all.

Do you believe your reorganization enhances the stature of your Information Systems Office, as recommended by the NRC committee, by merging it with your Communications Division?

Dr. FISK. Yes, I do, and we have had active discussions with the relevant advisory committees on this point. I think they would share that point of view.

Now, the reorganization that took place was done for a variety of reasons. One is that we are developing some very interesting technology in the communications area, such as ACTS, which actually can be used by the sciences community for distributing data between the various points of both the investigators and satellites and the source of the data at the ground.

I wanted to bring together the technical expertise that we have in communications with the people in information systems that were responsible for doing our overall coordination of information. There were also some management issues, personnel issues, and we need to have an organization of critical mass to this organization.

As I said, I think our advisory committee is formidable.

Senator PROXMIRE. My time is up on this round. Senator D'Amato?

SENATOR D'AMATO OPENING STATEMENT

Senator D'AMATO. Thank you, Mr. Chairman. Mr. Chairman, I am just going to ask that my opening statement be included in the record as if read.

Senator PROXMIRE. Without objection, that will be done.

Senator D'AMATO. I have three questions to be submitted for the record.

Senator PROXMIRE. Fine.

[The statement follows:]

STATEMENT OF SENATOR D'AMATO

Mr. Chairman, I am pleased to join you today as this subcommittee continues its hearings on the fiscal year 1989 budget for the National Aeronautics and Space Administration.

Yesterday, NASA Administrator James Fletcher presented this subcommittee with a NASA budget request of $11.5 billion for fiscal year 1989. He supported this request in his statement by citing three reasons why 1989 is to be the year of decision for NASA.

First, 1989 is the year in which the shuttle will be restored to safe flight. Currently NASA expects to launch 7 flights in 1989, building up to a level of 12 flights in 1992. To support this buildup in shuttle activity, NASA is requesting $3.8 billion for space transportation in 1989.

Second, NASA will move into full-scale development of the space station in 1989. Dr. Fetcher characterized the space station as the key to this nation's future in space. To support the continued development of the space station in 1989, NASA is requesting $967.4 million.

Finally, NASA plans to make fundamental advances in space science and technology in 1989. Dr. Fletcher specifically highlighted three initiatives: the advanced x-ray astrophysics facility [AXAF], the advanced solid rocket motor, and the Patherfinder program, which will develop the technology to support a range of future missions beyond Earth orbit.

Mr. Chairman, I am pleased that we are addressing the role of each of these programs in advancing our nation's leadership in space. I welcome Dr. Fletcher back to this subcommittee today, and I look forward to his comments on each of these program areas.

Thank you, Mr. Chairman.

PATHFINDER CRITERIA

Senator PROXMIRE. Senator Garn?

Senator GARN. Thank you, Mr. Chairman. I am pleased that the administration is going ahead with Pathfinder, because without that, I don't know how we get to the out of earth orbit manned mission that both Sally Ride mentioned in her report and also the Paine Report.

Could you describe the criteria used in formulating the Pathfinder issue?

Dr. FLETCHER. Well, the criterion, Senator Garn, was based on a lot of things, but it was primarily an interaction between Sally Ride—before she left—and the Office of Exploration—after she left—and the Office of Aeronautics and Space Technology [OAST].

Basically, the technology, partly, was the result of earlier funded programs in space technology. The result was a considerable expansion of the technologies that had been underway plus the addition of a lot of other things which we hadn't been doing, like aerobraking, and also the properties of fuel storage in space; things of that sort, which were a direct consequence of the studies that Sally Ride and John Aaron, who is here, feel they need in order to go ahead and implement some of the Sally Ride initiatives.

Senator GARN. There has been criticism from some people that Pathfinder may be more of an exercise in packaging rather than fundamental program starts, and much of what has been included has been previously funded by NASA.

How would you respond to that criticism?

Dr. FLETCHER. "Much" is, of course, a qualitative term. Some of the technology that we had been pursuing actually was augmented by considerable factors, but a lot of that technology in Pathfinder is new. So it is a combination. I would say, by far the largest portion of Pathfinder consists of new programs designed to implement the long-range initiatives in the President's national space policy.

Mr. CAMPBELL. I think it is typical that almost any program in technology would begin, would be focused, and would come out of our technology base. The civil space technology initiative last year had a significant funding base in addition to the new funding.

TECHNOLOGY INITIATIVES—LONG-RANGE GOALS

Senator GARN. The overall constraints on NASA's budget, how critical are the NASA technology initiatives in the space program in the near term?

Dr. FLETCHER. Senator Garn, as you have pointed out in the past, you can't put all of your money on near term; you have to invest some money in technology for the long term. Last year, we did start a program called civil space technology initiative [CSTI), with the idea that we were falling behind in our technology development at NASA; we are not investing what we should be doing in the future.

That program is well underway and it is aimed at the technology that is needed in the 1990's. Also, just technology development, period, for not only ourselves, but the whole government—the Defense Department, the Department of Energy, the National Science Foundation, and NOAA.

That was the purpose of CSTI. The purpose of Pathfinder is to look beyond CSTI, the civil space technology initiative, and focus on what we think are the long-range goals of NASA, and I think it is just awfully important to have those long-range goals in mind.

We are not going to spend large amounts of money going to Mars right away, but, nevertheless, we should have those goals in mind and be sure that we have got the technology to back that up.

So the Pathfinder technology is aimed for the latter part of the 1990's or at least for developments in the mid- to latter part of the 1990's so that we can make decisions to implement one or the other of the Sally Ride initiatives.

For example, I think we will be far enough along on things like aerobraking and things like storing fuel in space so that we will be in a better position to make a decision, say, in 1992 or 1993, as to where we want to go, whether we want to go back to Mars or whether we want to start establishing a base on the Moon.

Senator GARN. The industry was trying to look into the future. But don't look too far, because Admiral Truly and I are both too old to go to Mars, both of us. [Laughter.]

If I was going to go.

Dr. FLETCHER. With luck, even I will be alive and available to go to Mars when we make that decision. [Laughter.]

Senator GARN. I don't know that people who have no experience should start off going to Mars. [Laughter.]

COMMERCIALLY DEVELOPED SPACE FACILITY

A great deal of concern has been raised over the CDSF, as you well know. These concerns are being expressed not only from the perspective of how the government ought to proceed in encouraging commercial space enterprises, but also from a programmatic perspective, whether an unmanned microgravity free flyer is the most useful capability to be supported prior to space station deployment.

For example, we are supporting the extended duration orbiter program; we are reviewing the space head proposal for expanding the mid-deck locker capability of the orbiter; another recent proposal was lease craft, which was a freeflyer, as well but also capable of providing space observation to Earth.

How does NASA view these alternatives and what procedures do you employ in evaluating the commercial and also their programmatic merit?

Dr. FLETCHER. In terms of commercial merit, Senator Garn, we feel that is up to the private sector. We don't subsidize commercial ventures.

When the shuttle was moving along at a fairly good pace before the accident, we had a lot of private initiatives, and we had people that were betting that some of this microgravity research would pay off in terms of new products and new processes.

After the accident, there was a reevaluation that went on, both in NASA and among the people that wanted to use zero gravity for commercial purposes.

The Spacehab, the so-called Industrial Space Facility, and the Extended Duration Orbiter were all private ventures to enhance the ability of the shuttle to do microgravity work. It was in the commercial sector. When the market appeared to drop off, some of these folks, and particularly the industrial space facility, came to the government and asked if you can't please use this facility for government-type research.

The CDSF is the result of a commercial competitive system whereby we will, we the government, will use it for research purposes, and potentially, it will be used for commercial purposes. The Spacehab is another of such ventures. At the present time they believe that they can finance the entire venture.

Spacehab, I should say, is an extension of the mid-deck experiment. Basically, there is, as you know, a limited number of racks available for secondary payloads. Spacehab would use up another 25 percent of the payload bay for experiments that could be carried up and down with the shuttle much the same as the mid-deck experiments.

That would be a much less expensive program, and those folks feel that they can, in fact, pay us for the launch costs and the whole bit without any money from the government. We support that kind of commercial activity.

Now, the rest of the things that you mentioned are still speculative. We don't have memoranda of understanding, but nevertheless, we think private ventures in space should be encouraged to the extent that we can accommodate them on the shuttle. We do plan to pursue all of the ones that you mentioned.

CREW EMERGENCY RESCUE VEHICLE

Senator GARN. I do understand the limited space, because my experiments were not defined by what I could do or anything else but that everything I did had to fit in one locker. I had one locker, and if it didn't fit in one locker, it was not going. So there are a lot of things that various people wanted me to do, but there was a lack of space. What is the status of the CERV emergency rescue vehicle?

Dr. FLETCHER. The CERV, as we call it, is still under study. We like to think of it as a system rather than a vehicle, because there are a lot of ways of rescuing astronauts from the space station. It is underway and I think phase I is just about finished, is it not?

Admiral Truly?

Admiral TRULY. Yes, sir. Within the organization, the responsibility for the CERV program was handed from the Office of Space Station to the Office of Space Flight as part of a transportation architecture.

We are reviewing the studies that have been done and are going to bring to Dr. Fletcher recommendations as to what we should study in order to make sure that we have the basic capability of assured return; whether it be a particular configuration dock to the space station or based on the ground, and we are doing those assessments now. We intend to be studying that during the next year to define what direction the agency ought to go in.

Senator GARN. I understand there is a rough cost estimate, over $1.5 billion. Would it make more sense to consider a fifth orbiter that stays on station like the Russians do?

Admiral TRULY. As a matter of fact, we are looking at this as an assured return capability rather than a particular point solution, and it may very well be that a capability might be provided with better advantage to the transportation architecture for even less money. Looking at shuttle options is one that we are going to be doing long before we come to order the specific proposal.

Senator GARN. Thank you, Mr. Chairman.

INFORMATION SYSTEM DESIGN

Senator PROXMIRE. The NRC Committee report on information systems expresses concern over OSSA's failure to maintain a continuing dialogue—we discussed this yesterday to some extent—during the development phase of a project, although users are involved early in the information system design phase.

The report specifically cites the design of the high resolution imaging spectrometer portion of the Earth Observing System Instrument package. The users have requested narrow bands and a wide selection of bands. The first report of over 50 possible bands has met with approval—I thought that was fine—in the user community.

Later announcements of 118 channels and, more recently, of over 220 channels of data were met with amazement. I assume that the cost goes up with the more channels you have got. Can you tell us why these changes were made and the extent to which you consulted the user community?

Dr. FLETCHER. Yes. I am going to start out, but Dr. Fisk is going to have to answer the details. We have been very heavily involved in this whole activity. We were alarmed at the rapid increase in data rate required, too. I might just say that one of the reasons for the large data rates is for imaging, and when you deal with remote sensing, which is looking at the Earth for its global climate program, you are taking pictures of the whole Earth in a lot of different spectral regions.

You are looking at it in the visible region, the infrared region. In the infrared region, maybe there are five or six different bans. Pictures have a lot of information. Each picture has a lot of information. So when you add up all these images and all the bands, by the way, radar and a lot of other images, as well, it does, in fact, require a large amount of information to be transmitted to the ground.

Information transmission, I think, is being dealt with adequately. Dr. Fisk can comment on that. The problem is how do we archive it? We discussed that yesterday. There is an awful lot of information. I made a quick estimate one day and in some of the discussions, and the kind of archiving we are talking about is 40 Libraries of Congress every year or something of that sort. That is a lot of data to be archived.

It is not a trivial matter we are dealing with here, but nevertheless, we think we can deal with it.

Senator PROXMIRE. That would give the President something to lift when he makes his next State of the Union message. [Laughter.]

Dr. FLETCHER. It is, indeed, an enormous task, but the state-of-the-art is moving along so rapidly that we not only think we can do it, but we think we can do it without too much cost.

Dr. Fisk?

Dr. FISK. I am not sure I can detail this any more, but let me give general comments on that. You correctly point out that Earth sciences will drive our data requirements. In fact, we made an estimate that some 7,000 terabits of data will be generated by all of OSSA over the next 12 years and now at the end of the century——

Dr. FLETCHER. What is terabits?

Dr. FISK. It is 10 to the 12th bits, so it is one million billion.

Senator GARN. I still don't know what it is. [Laughter.]

Dr. FISK. I can follow it. If you have a stack of dollars bills.

Senator PROXMIRE. Nowhere near a googol, is it?

Dr. FLETCHER. It is nowhere near a googol. I think number of Library of Congresses.

Dr. FISK. Unfortunately, I don't know how many bits are in the Library of Congress, so I can't say. At any rate, I think the relevant point is that about 5,000 of those 7,000, whatever you choose, will be from Earth science, and most of that will come from the Earth Observer System and the form of instruments that are archived.

USER COMMUNITY INVOLVEMENT

To involve the users effectively in this has been an effort which I think we are succeeding at. For example, in the announcement of opportunity, which went out in January, to select a payload for EOS, we are selecting essentially three types of investigators, people who will use the facilities that NASA is building and direct how those facilities are to be built; the principal investigator in the mode of building instruments, but a wide range of interdisciplinary investigators that are chosen from universities from across the country who are responsible for using the data when it comes back and generating the data systems that will be used.

In addition to that, we have had ongoing discussions with USGS, the U.S. Geological Survey, that are using their EROS data system.

Senator PROXMIRE. Let me interrupt. Why didn't you folks meet with the user people when you expanded your capacity to 118 then to 220 channels?

Dr. FISK. I am not familiar with that event particularly, and I am not sure we didn't.

Senator PROXMIRE. They were amazed. That was the verb they used, "amazed," when they heard about this tremendous expansion.

Dr. FISK. I will have to go back and ask the people involved. I am sorry. I don't know that from personal experience.

Senator PROXMIRE. Will you provide that for the record?

Dr. FISK. I will, indeed.

[The information follows:]

The high resolution imaging spectrometer [HIRIS] is a major instrument intended for flight as part of the Eos payload flying on the space station polar platform. The design of this instrument is a result of close collaboration between the Jet Propulsion Laboratory [JPL] instrument design team and the research community as represented on the Imaging Spectrometer Science Advisory Group [ISSAG]. The ISSAG, consisting of 21 members, was chaired by Professor A. Goetz of the University of Colorado. The remainder of the panel was drawn from 11 other universities, 3 NASA centers, 2 consultants, and 2 were from other government agencies.

Considerable discussion took place over the last 4 years between the design team and the ISSAG as to the requirements for spectral resolution in both the visible and near infrared portions of HIRIS. The consensus of the community was that 10 nm. spectral resolution was desirable across the full spectrum to be covered by HIRIS. The JPL design team found that there was a reasonable design solution to meet this user community requirement and that the impact on HIRIS would not result in costs exceeding the guideline constraints suggested by NASA headquarters. This results in a baseline design for an instrument with 192 bands as reflected in the phase A report published in December 1987.

The number of channels for the instrument is a direct result of the spectral region that must be covered to meet the community needs and the spectral resolution required to study the phenomena and surface minerals identified as essential by the ISSAG. In short, this instrument has been designed to meet the user requirements within anticipated constraints on funding, instrument mass, and data rate. NASA believes that the present design is an appropriate compromise of these factors. The research community carefully circumscribed its plans for HIRIS so as to keep the instrument doable while maintaining good value in terms of scientific payoff versus financial investment.

Dr. FLETCHER. By the way, they weren't the only ones. Mr. Myers, who isn't here today, and myself were a little bit surprised at the numbers, too.

Senator PROXMIRE. The committee felt that the most important reason for involving the user community in the planning of information systems might be the controlling of costs by determining the limits of the data capability that is provided to the user. At a time when we have to be extremely cost conscious, doesn't that argument make a great deal of sense?

Dr. FLETCHER. I think that controlling the costs, Mr. Chairman, does make a lot of sense. On the other hand, we have to balance the very rapidly increasing capability in electronic storage and electronic capability, and I think you will be surprised how inexpensive that large of a data rate and data storage can be.

Senator PROXMIRE. Wouldn't users be helpful in that?

Dr. FLETCHER. Yes, indeed, and we are in constant dialogue, as Dr. Fisk mentioned, with the users to try to balance out not only what needs to be transmitted to storage, but in what form.

COMPATIBILITY AMONG INFORMATION SYSTEMS

Senator PROXMIRE. That is exactly why I think you ought to, when you went to doubling and quadrupling the number, that the users should have come in.

Another issue the NRC Committee addressed in mass information systems is the lack of compatibility among its information systems. NRC believed NASA's Office of Space Science and Applications was moving toward the adoption of what is termed interoperability, or homogeneity, among its various information systems. Can you tell us what specific steps the Office is taking to do this?

Dr. FLETCHER. I can start, Mr. Chairman. This is not a trivial problem. We are talking about interoperability, I presume, across NASA, is a humongous job, because each center has its own data system, and as you probably have heard, the data systems don't usually talk to each other.

There is all kinds of advertisements on the TV and places like that say that they can, but they can't. So we are very conscious of that on the space station. We are trying to arrange interoperability of all of the centers and the contractors that are involved in the space station. That involves five centers and a large number of contractors interacting with headquarters. That is the purpose of the TMIS system that we discussed yesterday.

We are addressing the problem of doing it across NASA and looking at what the least expensive way to do that is.

Manny, is he here?

Mr. CAMPBELL. No.

Dr. FLETCHER. Mr. Peralta and Dr. Hinners are dealing with that problem, trying to figure out a way to make NASA interoperable, not across the board, because that would be an awfully big cost, but at least in critical areas, particularly in the administrative area and things like computer-aided design and computer-aided manufacturing.

ACHIEVEMENT OF INTEROPERABILITY

Senator PROXMIRE. Let me just say that NRC stated that the biggest problem the office was up against was time. I quote them:

> Time is the enemy now, and OSSA is faced with critical choices that must be made for the massive flood of data from the new NASA initiatives, and the desire of researchers is to access the data. Both increase the frustration of users and make it

difficult to convert from the status quo to the state of the art information systems to satisfy NASA needs and the users' needs.

When will you achieve that interoperability?

Dr. FISK. I think we are making considerable progress on it at the moment, sir. That report was written in 1985, to my recollection?

Mr. CAMPBELL. 1987.

Senator PROXMIRE. 1987.

Dr. FISK. The Commission was in 1985. This is a considerably wide network throughout the country for transmitting the data. Both the span is initiated by space flight physicists. There are literally thousands of those nodes in the country which allow researchers to access the data, and there are three data centers in existence.

There is the National Space Science Data Center at Goddard; there are planetary and Earth science and astrophysics data centers in distributed places around the country; and then we are also now interconnected to NOAA and the USGS data centers.

Senator PROXMIRE. Dr. Fisk, let me interrupt and say, what I asked was, when? Can you give us when you will achieve interoperability?

Dr. FISK. I think that there is a great deal of interoperability—I don't know how to quantify that statement—in existence at the moment.

Senator PROXMIRE. Don't you have a benchmark?

Dr. FLETCHER. Mr. Chairman, it is really not a fair question, because you will never achieve complete interoperability.

Senator PROXMIRE. I understand that.

Dr. FLETCHER. It is a question of degree, I think, we are aiming to.

Senator PROXMIRE. I say adequate interoperability.

Dr. FLETCHER. Let's say adequate interoperability with regard to remote sensing, because that is the biggest part of what we are talking about. I think by the time we define the EOS requirements, Len, we ought to say, yes, we have finished that.

Dr. FISK. I think that is fair to say.

DATA SYSTEM INTEROPERABILITY

Senator PROXMIRE. What are your goals?

Dr. FISK. We will not fly EOS unless the data system interoperability is in effect. That has been said by every committee who advised us on building the Earth system, that if we don't have the data system in effect in advance then we shouldn't do it.

Senator PROXMIRE. Then you ought to have some time.

Dr. FLETCHER. It will be the early 1990's.

Dr. FISK. It is our plan to have EOS in orbit, if it gets a program new start and so on by 1995.

Senator PROXMIRE. Senator Garn?

GLOBAL GEOSPACE SCIENCE PROGRAM

Senator GARN. Dr. Fletcher, in the space science and applications area, the physics and astronomy budget request includes $101 million for fiscal year 1989 for the Global Geospace Science Program. Could you explain the program and, particularly, the involvement of other nations in that particular program?

Dr. FLETCHER. As you indicated, that is an international program designed to measure the Earth-Sun interaction, and that is very important scientifically, but there is also some feeling that variations in this plasma that exists between the Earth and the Sun, and also behind the Earth, could have enormous impacts on the phenomenon on Earth.

We all know the phenomenon of ionospheric reaction, which disturbs radio signals and things of that sort, but it is even conceivable that could affect climate. Basically, this is a scientific program that has potential applications.

Dr. Fisk, you know the details of the program.

Dr. FISK. This is literally the largest international scientific program that has ever been undertaken. The total investment worldwide is approximately $1.6 billion in this program. There are spacecrafts that will come from the European Space Agency [ESA]; there is a spacecraft that will come from Japan. We anticipate Soviet spacecrafts or data to be made available to coordinate this activity. NASA's contribution is the two GGS spacecraft, one which is out is in the solar wind and one which is in polar orbit about the Earth. That is the GGS Program.

Also, we are contributing instruments to other spacecraft of the Europeans. The mission is to go in the early 1990's, and, as I say, it is intended to do a coordinated study of the flow of energy throughout the curve of the Sun, the surface of the Sun, through the solar wind into the ionosphere and into the upper atmosphere.

Dr. FLETCHER. Senator Garn, it might be interesting to give a briefing on that sometime, for entertainment purposes, if you have the time. That is really a spectacular program. We and the Europeans and the Japanese have the Earth and the Sun surrounded by spacecraft. Anything that happens in that plasma we will be picking up on one or the other of those spacecraft.

There are a lot of things out there that we don't see but can be measured by these scientific instruments. It is really quite a spectacular program.

PROPULSION AND POWER RESEARCH

Senator GARN. In the aeronautics technology area, which we discussed yesterday, you have requested an increase of $25 million in propulsion and power research in fiscal year 1989. Could you explain the reasons for this increase and the importance of technologies improvements in this particular area for future international competitiveness of our civil aeronautics area?

Dr. FLETCHER. I am going to ask Dr. Ballhaus to respond to that, but this is part of the increase that we discussed yesterday where we do think it is time that we revisited the subsonic aircraft and improved our technology so we can be competitive there and also to begin to address the supersonic technology, which is the next phase.

Dr. Ballhaus?

Dr. **Ballhaus**. I think Dr. Fletcher covered that correctly. The aeronautics augmentations are intended to help maintain our competitive posture, and they deal with a variety of speed regimes, the subsonic regime, which is, of course, the most important right now in terms of our international balance of trade.

But we are also trying to get a leg up on high-speed regimes, such as supersonic flow through engines, which would allow substantial increases of efficiency over what we have today. That is a part of the propulsion augmentation.

AERONAUTICAL RESEARCH

Senator **Garn**. I won't ask any more specific questions today in that area but would reiterate my request that we would like a lot of detail in the aeronautical area, because if we think the other programs are unknown in Congress, at least they have some excitement up in space and there is some interest, and there is virtually a total lack of knowledge of what NASA does in the aeronautical area. That is not overstating the case. It is virtually a total lack of knowledge.

Dr. **Fletcher**. Senator Garn, you are absolutely right. Our concern is that the needs for going ahead with the larger programs like the advanced solid rocket motor in the space station that Congress might be tempted to squeeze on the aeronautics. I think that would be an unwise move in view of the huge economic potential of that program.

Senator **Garn**. Well, there is almost an immediate payoff. When I say immediate, I don't mean next week, but there is a very near-term payoff when you look at aeronautical research. If you just compare the fuel efficiency of the 757 or the 767, new generation aircraft we have now compared to what we were flying; if you look at the development of aviation engines when I was back flying the old KC-135 with the water injection engines and just moving the JT-3 engines, the old technology, but now remarkably, cleaner, more fuel-efficient than the original engines, and we have gone far beyond the JT-3. The paybacks are absolutely enormous, the fuel savings and efficiency from that research.

Mr. Chairman, I will submit the rest of my questions.

Dr. **Fletcher**. Senator Garn, at the risk of interrupting, we made an arrangement back in the early days on some of these fuel-efficient engines with Pratt & Whitney, and the arrangement was that as they made money off the engines, they would pay NASA royalties for the effort. We hadn't received any royalties. I got a $3.2 million check. I have never seen one that large before 2 weeks ago as part of those royalties. Unfortunately, I had to give it to the Treasury Department. [Laughter.]

Senator **Garn**. Well, you know, unfortunately, I have been here too long. I used to be impressed with $3.2 million checks. Now when you sit on the Appropriations Committee and they round off to the nearest $100 million, it doesn't sound too impressive anymore.

Mr. Chairman, I will submit the rest of my questions for a response in writing.

LIFE SCIENCES

Senator PROXMIRE. You are requesting $101.7 million for life sciences in fiscal 1989. That is an increase of $32 million over the current budget.

According to your budget justifications, in 1989 the definition and design phase will be completed on the program's microwave observing project, which will analyze microwave signals in space for evidence of advanced life elsewhere in the galaxy. You will then begin the development phase of signal processing systems which will be used with existing radio astronomy facilities in NASA's deep space network antennas.

This program used to be called the search for extraterrestrial intelligence, or SETI. It received the Golden Fleece award about 10 years ago.

Dr. FLETCHER. I was present, Mr. Chairman, when you made the award.

Senator PROXMIRE. Well, you earned it. [Laughter.]

I think I have always figured we should search for intelligent life here on this planet. In Washington, it would be hard to find. [Laughter.]

SIGNAL PROCESSING DEVELOPMENT EFFORT

Are other nations involved in the signal processing development effort? If so, what are they contributing?

Dr. FLETCHER. Mr. Chairman, the other nations are involved in SETI and have been for a long time. But what we have in front of you for the fiscal 1989 budget is an entirely new way of dealing with the search. It is a system which looks at a lot of different TV channels, if you want to think of them that way, but we call them microwave channels, all at once, something like 10 million different channels at once, which is 10 billion times more comprehensive than all of the rest of the things that we have done until this date.

So what is being asked for is to fund the building of that instrument, which I think will be finished in about 1990 or 1991, in that timeframe. When we have that, we will be able to look at, very rapidly, a large number of stars very quickly. For example, early tests have allowed us to pick up, right away, a 1-watt signal—1 watt is less power than on your Christmas tree, tiny lights—from Pioneer X and XI, which is 4 billion miles away.

Well, that is pretty close compared to the nearest stars, but we think that there is a good chance that if anybody is out there, we will pick them up with this system if it is anywhere near our own system.

INTERNATIONAL COOPERATION

Senator PROXMIRE. How much do other nations contribute to this?

Dr. FLETCHER. This particular instrument is a U.S. instrument. We will use this instrument on radio telescopes throughout the world, but starting with our own radio telescopes.

Senator PROXMIRE. But overall, how much do other nations contribute, if anything, to the search for advanced life in the universe?

Dr. FLETCHER. I don't know. The Soviet Union is the primary contributor in this area.

Dr. FISK. Offhand, I don't have any way of measuring their cost.

Dr. FLETCHER. We can't estimate their costs too well. We can give you a report on their activities for the record, though, Mr. Chairman.

Senator PROXMIRE. Are they part of this? Are they working with us, or are they working separately?

Dr. FLETCHER. They are not working with us on this instrument. This instrument has to be done by a contractor, and it is not worth spreading around. This is not an expensive instrument. We are only asking for $10 million, I believe.

Senator PROXMIRE. Is the Soviet Union the only other nation that makes a significant effort in this search?

Dr. FLETCHER. To my knowledge, they are the principal nation, but I think we would have to pursue that further to see who else is doing that.

Senator PROXMIRE. The reason I asked that is because it seems to me that the interest of other nations would tend to validate this kind of a study. I would doubt if there is any military implications; maybe there is, but it would be very subtle and distant. The notion that there is intelligent life somewhere, it would seem to me, would be of the same interest to other countries, developed countries that are prosperous that aren't involved in this. Their disinterest, it would seem to me, it would suggest to a layman, such as I am and other Members of Congress, that this isn't given much of a chance.

Dr. FLETCHER. Dr. Fisk is going to respond to that in a minute, but let me just say that there is intense interest throughout the world in this program.

Senator PROXMIRE. They are not advanced in terms of technology. This is the kind of thing when you go into the grocery store to look at the magazine, remarks in the magazines are talking about how they are coming down [laughter] associating with our most attractive women. [Laughter.]

Dr. MARTIN. That is because they have no data.

Senator PROXMIRE. They have got good judgment, anyway, good taste. No data, but good taste. No data but plenty of dates. [Laughter.]

Dr. FLETCHER. I can assure you there is a worldwide interest in this program. But in all fairness, they are not anywhere as near as advanced in the technology that is represented in this program. I might say that the spinoffs that we are talking about are not primarily military, but they are radio astronomy, diagnostic medicine, geophysics, things of that sort, even material science.

LIFE SCIENCES BUDGET INCREASE

Senator PROXMIRE. The $32 million increase, is that in order to make a more intensive search for intelligent life?

Mr. CAMPBELL. It is very small.

Senator PROXMIRE. How big is it?

Dr. FISK. This year it is $4.4 million in total.

Mr. CAMPBELL. Total, including tracking.

Dr. FISK. Including tracking. In the life science budget that you have in front of you, there are two other areas of growth in that budget. One is the preparation for the space life science, Spacelab mission which will fly in 1991, and the second is the preparation of life science for the space station.

Senator PROXMIRE. How much have you spent over the years on the terrestrial search?

Dr. FLETCHER. It is minimal.

Mr. CAMPBELL. It has been a base program; $2 to $3 million per year.

Senator PROXMIRE. Over the years, per year?

Mr. CAMPBELL. Per year.

Senator PROXMIRE. For how many years, 20 years?

Mr. CAMPBELL. I don't know. I don't remember.

Frank ?

Dr. MARTIN. About 10 years.

Dr. FLETCHER. It went down to zero when we got the Golden Fleece Award.

Senator PROXMIRE. The Golden Fleece Award. I will give you another one and save a few million more.

Dr. FISK. In response to your question on international cooperation, let me just make it clear that this program can agree to them in this cooperation because we need to put these features on radio telescopes throughout the world, particularly in the Northern Hemisphere. In places you can only see from the Southern Hemisphere, we don't even have a telescope. We have an attempt to put this on the Effelsberg detector in Germany.

Senator PROXMIRE. Would the defense cooperative effort that is involved put it on a Soviet device?

Dr. FISK. I think that would be an interesting discussion, but it is very high-tech signal processing, and we don't have active discussions of putting it on Soviet radio telescopes because it is high-tech and because there are some interesting spinoffs for signal processing. That could be an interesting discussion.

Senator PROXMIRE. The Soviet Union and China, together, are involved in a tremendous proportion of the Earth's surface.

Dr. FISK. That is true. Fortunately, the world spins.

Senator PROXMIRE. The world what?

Dr. FISK. The world spins.

Dr. FLETCHER. The universe stays relatively fixed, so we get a shot at it every 24 hours.

Senator PROXMIRE. I hope that is true. [Laughter.]

These days, you never know. [Laughter.]

Senator Grassley?

STATEMENT BY SENATOR GRASSLEY

Senator GRASSLEY. Thank you, Mr. Chairman.

There is one advantage, I suppose, to my not having been here over the last couple of days. I have been informed that most of the questions I was interested in have already been asked, but I do have a couple of questions that are still on our list not touched on.

So I want to apologize for not being here, particularly yesterday. I know it was a very important day for your agency and this committee. I was at the Budget Committee yesterday and just now came from the Agricultural Subcommittee on Appropriations.

Before I ask questions, I have a short statement I want to make, Mr. Chairman, and even though I am addressing it to you, Dr. Fletcher, it is in no way other than explaining the quandary that we are in, not that I expect you to be able to do anything about it.

But you know that we have a lot of agencies that we deal with in this subcommittee other than your agency; programs such as Housing and EPA and National Science Foundation and the Veterans' programs.

As you know, this administration, meaning the Reagan administration, has tried to kill many of the programs that this subcommittee deals with during this time when we are faced with huge deficits, and spending on programs for some of these agencies have been cut by 30 to 50 percent during the past 7 years, while the needs of the poor and elderly has increased each year.

It appears that OMB, unable to kill several of these programs that they have been trying to over a long period of time, they have finally come to the realization that Congress feels strongly about some of these programs, is now pitting your agency and the future of the space program against these other programs, thus forcing Congress into making a choice between helping the poor or continuing our space program.

I am not sure that this is true leadership on the part of OMB and this administration or it is just being realistic. But either way, it doesn't solve our problems, and it sure doesn't help you with the demands that Congress has put upon you.

Aside from my disappointment about this apparent lack of leadership, I am also very concerned that this has provided us with difficult and unrealistic options. In 1980, for example, we were reinvesting $5 in our cities for every $1 that we were giving in foreign aid.

Today, the President's budget request of $18 billion for foreign aid is only a little bit more than the $15.7 billion being reinvested in our country through these programs that I just mentioned.

I know, Dr. Fletcher, that you have been asked many times what you feel will happen with space programs if you don't get the 30-percent increase that your agency has requested, but, and very rhetorically, I know, what would you do if you were in our shoes and had to make the hard choices that we will have to make between meeting your needs and that of the programs I mentioned for the poor and the elderly in our cities?

I suppose that is a very difficult question for you to answer. It is really a political question more than it is one for an administrator to answer.

Dr. FLETCHER. Well, it is partly a political question and partly a policy question and also partly a mechanical question of how do you deal with a budget summit agreement which was made last year? It is hard for me to think through the mechanics. You all are in a position to do that better.

In terms of policy, it is a question of how much we invest in the future and how much we invest in our children versus how much we invest in things that are here and now. I think that, as we have discussed, we are talking about 1 percent of the federal budget or a much smaller percentage of the total GNP for investing in the future, and that is science and technology together.

The President has said, "Hey, you have got to put something into the future." Our children will never forgive us if we don't provide some kind of a world which allows them to feel proud of their country and competitive with the rest of the world."

So the space and science budget was increased significantly, and I think properly so. How you deal with that in the mechanics of the budget process, I think, is something I really can't comment on. That is difficult but somehow, it has got to be solved.

UNIVERSITY SPACE ENGINEERING RESEARCH PROGRAM

Senator GRASSLEY. I will get a little more specific. You mentioned in some of your testimony that in the fiscal year 1989, NASA is expanding its university space engineering research program.

I would like to have you just elaborate just a little bit on that program and also, I suppose you probably can't answer this for me now, but has Iowa State University been selected as one of those [laughter], of the final 25.

Dr. FLETCHER. I think the best bet for Iowa State is for the next round, Senator Grassley. Because 25 people were selected for the negotiating list, and only 8 are going to be selected from that 25. But there will be additional selections next year.

Let me tell you about that program. It really relates to your first question about the future versus the here-and-now. We think it is awfully important that the school system, including universities, start dealing with this problem of science and technology and preparing young people for the future world that they are going to live in.

Science and math, as you have heard many times, are a very important part of that. Space will also be a very important part of that. So we decided that we really ought to start setting up a series of these space engineering research centers at institutions around the country. By the way, Iowa State is a very highly qualified institution.

I will have to blame the selection on Dr. Ballhaus, who is sitting behind me. [Laughter.]

That is done by a jury of their peers, and Iowa State, I think, ranked very high but didn't quite make the first cut. I think it is just an awfully important program, though, Senator Grassley, that is connected with technology and space for the future and protection of our children.

ROTARY ENGINE

Senator GRASSLEY. I understand that the rotary engine study is included in your request this year. We can't get a figure on the amount of money that is included in your request for that.

Dr. FLETCHER. We have that figure, Senator Grassley. I think it is $2 million.

Mr. CAMPBELL. It is about $3 million, just a little over $3 million, Senator.

Dr. FLETCHER. Approximately $3 million.

TECHNOLOGY UTILIZATION

Senator GRASSLEY. Do you have a section of your agency that is devoted to technology transfer to the private sector?

Dr. FLETCHER. Yes, indeed. We have a number of sections in NASA in that area. Basically, we have an old program called technology utilization, which is a network of systems which transfer technology routinely, not only from NASA, but it has been broadened to include all other government agencies. This network is tied together. It is beginning to be tied together with all of the other agencies. So I have forgotten how many technology utilization centers there are, but it is on the order of 11 or so throughout the country.

In addition to that, the other parts of the government are tying into this and setting up their own technology utilization centers. We established a new program about 3 years ago. We call it the Centers for the Commercial Development of Space and we have a similar number of those throughout the country.

This is to make good use of the technology that we are developing, microgravity, particularly, but in other areas, as well, for people to move out and make use of the technology that comes out of space for space use.

As an example of the latter, I think it is important to point out that the real breakthroughs in superconductivity that were made by these two Chinese gentlemen last year in the summertime, about, where they were able to get superconductivity at very high temperatures, I think on the order of 70 and 80 degrees Kelvin, now up to 180 degrees Kelvin, were NASA investigators. They were supported by two of the centers, one at the University of Houston and one at the University of Alabama.

So for a lot of things, technology comes out of those commercial space and technology utilization centers. It is impossible to quantify how much of it, but more of that needs to be done throughout the government, and NASA has been the Exhibit A that other people are using. I know that the Defense Department is beginning to pick up some of these same notions and spreading the technology out in the private sector.

Senator GRASSLEY. OK.

Mr. Chairman, in closing, I just say to Dr. Fletcher, I compliment you on your efforts in turning the space program around in these years of troubled times.

Dr. FLETCHER. Thank you.

Senator GRASSLEY. Thank you.

SPACE SHUTTLE OPERATIONS

Senator PROXMIRE. Thank you, Senator Grassley.

Dr. Fletcher, you are requesting $2.2 billion for space shuttle operations in 1989. That is an increase of about 20 percent, $400 million over your current budget. According to your latest mixed fleet manifest, you plan to conduct seven shuttle missions in fiscal 1989.

That makes the average cost of a mission $314 million. Do you expect these operating costs to stay fairly constant over the next few years so that the cost per launch declines somewhat as the number of missions increases, or do you anticipate growth in the cost of shuttle operations?

Dr. FLETCHER. To answer the last question first, Mr. Chairman, we expect the shuttle cost per flight to go down significantly, particularly as the number of flights increase. The $350 million, whatever the figure was you mentioned——

Senator PROXMIRE. $314 million.

Dr. FLETCHER. Yes, $314 million, because, basically, most of the shuttle costs are what we call fixed costs, costs that are required, no matter how many flights that you launch, and really have to do with the maintenance.

Senator PROXMIRE. That is right. That was the thrust of my question: Do you expect the cost to stay right where it is with the rising number of flights but the cost overall to stay close to the $2.2 billion?

Dr. FLETCHER. The fixed costs are more like $1.8 billion in today's dollars, and the variable costs are more like $40 million marginal costs per flight. So you can take the $1.8—this is for the outyears, anyway—and divide it by the number of flights and add $40 million to it, and you have got the cost per flight.

We estimate out in the period of 14 flights per year, it is closer to $160.

Mr. CAMPBELL. That is right, $156 million.

Dr. FLETCHER. That is right, $160 million per flight, which is, again, not what we used to advertise, but considerably less than an expendable launch.

SHUTTLE MANIFEST

Senator PROXMIRE. Your tentative manifest lists 13 shuttle flights in fiscal year 1993. According to the trade press, NASA was criticized March 1 at the NASA Advisory Council meeting for projecting a maximum flight rate of 14 flights per year in 1994.

That position was criticized by NASA member Jasper Welch as self serving and I quote, ". . . an inappropriate stance of stewardship of public trust." Welch also believes that NASA should not manifest the full flight agenda it achieves but should build in a cushion of 10 or 11 flights on the manifest.

Apparently, NASA's response was that a lower flight rate would be lower funding. If the science payloads aren't on the manifest, a NASA representative said, NASA doesn't get the money for them, and that is the bottom line. That kind of response does sound self-serving.

Frankly, I am somewhat concerned that the failure to provide a cushion in putting together your manifest could result in counterproductive launch pressures, the kind of which were seen before the *Challenger* disaster.

Given your mixed fleet approach, which makes expendables available for some science missions, why wouldn't it make sense to have a more conservative shuttle manifest?

Dr. FLETCHER. I am going to ask Admiral Truly to address that in a minute, but I think there are a lot of misquotes in that article. Basically, you have to plan for some number of flights. It costs you so much per flight, and you have to order the external tanks and so forth.

What we are planning is for 14 flights per year. This is internal planning. We have a lot of flexibility within that 14 flights per year, because a lot of those are spacelab flights, and basically, if you only fly 13 or 12, you simply don't have as many spacelab flights. You can stretch out that part of the program. Of course, you don't get the research done that you are supposed to. In addition, you have slack in the ELV's.

I think what the person answering the question was trying to say is that there is a tendency, if you order ELV's as backup, in fact, we discussed that earlier, there is a tendency for people to say, "Well, you don't really need those expendable launch vehicles; let's cut them out."

So basically, we are trying to have a mixed fleet, and we have flexibility within the 14 flights per year. I don't want to say that we can go to 16 or 20. We would have to, if we plan for a higher number, we can probably make it, but it would cost more money.

The present funding plan is for 14 flights per year. With that as a start, I would like Admiral Truly to respond.

Senator PROXMIRE. Mr. Truly, go ahead, sir.

Admiral TRULY. Yes, sir; General Welch did make those comments at that meeting. As a matter of fact, he helped us a great deal in preparation for this budget, the proper mix between a mixed fleet and the shuttle flights. He led an NRC study that was also supported by a study that we did that resulted in the architecture between the balance of the mixed fleet that we have and the buildup to 14 shuttle flights per year.

I would point out that there are a couple of misleading factors other than what Dr. Fletcher said, though, about the outyear manifest. As a matter of fact, even though there are 14 flights shown and we are budgeted, that does match our budget request.

In fact, there is some flexibility in those flights, because all of them are not completely full payload base, even though they are missions that are shown on the manifest.

Second, there are a number of those outyear flights that are repeats or follow-on of some of the science spacelab missions.

The bottom line is that we are not going to push the flight rate to an unsafe or a pressure cooker kind of schedule.

Senator PROXMIRE. That wasn't the concern. The concern was that this was a way of milking the Congress for more money.

Admiral TRULY. No, sir.

Senator PROXMIRE. So you could argue the flights weren't costing much because you have had so many flights in view of the budget that you have.

Admiral TRULY. No, sir; and that is very much not true.

The requirements we have built up the shuttle flight rate is that, I am trying to point out, is balanced by those missions that we could offload and also put on the mixed fleet. It also had to do with adjustments in the DOD outyear planning, and even at these flight rates, we only finally reach a balance between the backlog of civil space payloads and transportation capability in those very years which are 6 or so years ahead now.

SHUTTLE SAFETY

Senator PROXMIRE. Dr. Fletcher, let me ask you about shuttle safety. Last February, Time magazine ran a story indicating that the shuttle program was ignoring whistle blowers. The story referred to a $5.2 million suit filed by a shuttle contractor employee who claimed she had been prosecuted by her company because she had pointed out some serious shuttle software deficiencies.

The Time story also referred to a former Rockwell quality assurance engineer who said that an audit he conducted of Rockwell hardware and software last July revealed that only 12 percent met NASA's contract specifications. The day after he submitted his report, he was told to change the figure to 96 percent. He refused. Five weeks later he was suspended, and he was subsequently fired.

Are you aware of the article, and if so, do you have any comments on it?

Dr. FLETCHER. I am very much aware of the article, Mr. Chairman. We have been looking into some of these allegations before the article appeared. When I say "we," we have an Inspector General who is highly qualified but not with us today, but he had been looking at some of these reports before the article appeared. Since then, he has studied the articles very carefully, and so far, he has found no evidence for prosecution of whistle blowers, nor any evidence, so far, of the overruns and the ignoring of the safety requirements.

On the other hand, these are ongoing investigations, and we will continue. The Inspector General continues to report to me on them.

Senator PROXMIRE. Did he find that it was an error by Time magazine when they reported that the day after submitting his report, this man was told to change the 12 percent figure to 96 percent?

Dr. FLETCHER. I don't know the details.

Senator PROXMIRE. He refused?

Dr. FLETCHER. Certainly, he felt that the charges made by the Time magazine were not substantiated, not able to be substantiated by his investigation, anyway, and he looked into it. It is a pretty thorough group that the Inspector General has, and he found no evidence for the data that was suggested in the article.

Senator PROXMIRE. Did the Inspector General report to you?

Dr. FLETCHER. Yes; he did.

Senator PROXMIRE. Is that report available?

Dr. FLETCHER. I believe it is.

Admiral TRULY. I believe it has been made available.

Senator PROXMIRE. Make it available to us.

Dr. FLETCHER. With the Freedom of Information, sure.

Senator PROXMIRE. We would like to see it.

Dr. FLETCHER. It is a little sensitive.

Senator PROXMIRE. Whatever you have to knock off for classification reasons, I would like to see it.

Dr. FLETCHER. Sure.

INSPECTOR GENERAL AUDITS

Senator PROXMIRE. According to your last Inspector General's report, NASA had pending as of September 30, 1987, $10.3 million of Defense Department Audit Agency audits that had remained unresolved for over 12 months. Can you tell us what progress you have made in resolving those audits and indicate why they dragged on for so long?

Dr. FLETCHER. Well, the Inspector General process is a long, drawn-out process, and the response to them is long and drawn out. Some of them take longer than others. Some of them take as long as 12 months. We are continually monitoring, though, Mr. Chairman. When something takes 12 months, we ask why, and it is usually that the investigation was incomplete or that we couldn't respond in a way to make more sense than the difficulty to begin with.

Also, the things involving fraud or criminal cases are dealt with very expeditiously. But the problems, the ones that drag on, are the ones that require detailed auditing, and we want to make sure that we don't prosecute somebody before the data has all been brought to my attention. By and large, some of them do run as long as 12 months, but not most of them. Most of them are resolved.

EQUAL EMPLOYMENT OPPORTUNITY

Senator PROXMIRE. I want to get in a new area. I am not picking on you on this one, because I ask every agency that comes before this subcommittee the same kind of questions. I think it is very important, however, if we are going to make the federal government an example of justice and opportunity.

I wanted to address your record of hiring women and minorities. I am troubled by an article I read in the January 17 issue of the Washington Post entitled, "USDA Behind Schedule on Minority Hiring Plan."

The article said that out of the 58 federal agencies, only NASA, the Interior Department and the Panama Canal Commission ranked lower than USDA in percentage of blacks in the work force. Why is your minority hiring record so poor?

Dr. FLETCHER. Mr. Chairman, I saw that same article, too, and I said, "Wow, what is going on here?" because we have always been proud of our record in minority hiring since we first started back in the 1970's. Dr. Jenkins, we were able by some miracle, to recruit her. She was Assistant Superintendent of Schools in Berkeley, Calif., and we were very lucky to have her join us. I thought we were doing very well.

In responding to the article, she put together some of the real facts, and the article is accurate, by the way. The problem is that we are a science and engineering agency, Mr. Chairman. Half of our work force is scientists or engineers. In that area, just take engineering, for example.

Senator PROXMIRE. How do you compare with NSF, for example?

Dr. FLETCHER. Much better than NSF in hiring of blacks.

Senator PROXMIRE. Not according to this article. This article said that of all the agencies they examined.

Dr. FLETCHER. In engineering, Mr. Chairman. Basically, I have in front of me, and I will supply it for the record, if you like, we rank fourth in the government in terms of percentage of black engineers hired. EPA, DOT, HHS are the only ones that rank ahead of us. We are well above the government average in this area. If you look at the total numbers of people, we are second in the government in hiring of black engineers. We hire something like 400 black engineers in the agency and, of course, the DOD is larger, with 2,500, but nobody else comes close to that 400.

So in the engineering and science, and I can go through the same for Hispanics if you like, we do very well. Unfortunately, there is just a limited supply, and we are working on that continually.

MINORITY WORK FORCE PERCENTAGE

Senator PROXMIRE. What percentage of your total work force is composed of minorities?

Dr. FLETCHER. Harriett, can you help me? I may have it in front of me.

Dr. JENKINS. Yes, minorities in the total work force make up 19.6 percent.

Senator PROXMIRE. 19.6 percent?

Dr. JENKINS. Of the total work force, 19.6 percent are minorities.

Dr. FLETCHER. About half of those are scientists and engineers, Mr. Chairman. That is why we have trouble.

Senator PROXMIRE. We have a number of agencies coming before us. It may be unfair to compare NASA with some of the others, but that is quite a low percentage as compared to other agencies.

Dr. JENKINS. Excuse me.

Dr. FLETCHER. There is no way we can actually catch those overall, but we would like to be first in terms of government agencies in terms of scientists and engineers, where we compete. We are taking steps to do that.

Senator PROXMIRE. How about the percentage of women?

Dr. JENKINS. Excuse me; I misspoke. I said 19. It is 14 percent minority and 26 percent all women.

Senator PROXMIRE. Twenty-six percent women?

Dr. JENKINS. Yes; minorities and women make up 35 percent of the total work force. That is women and minorities. All women, 26.9 percent. You must remember that minority women get counted in the all female figure, and also the minority figure.

Senator PROXMIRE. So there is double counting.

Dr. JENKINS. That is why I say 35 percent minority and female. That includes nonminority women, minority men, and minority women.

Senator PROXMIRE. When you adjust for the fact that some of the minorities are women, it would be less than 35, right?

Dr. JENKINS. No, no. Minorities are 14 percent—8 percent men, 6 percent women. Nonminority females are 21 percent. So the 35 percent is not a double count.

MINORITY HIRING

Senator PROXMIRE. All right. What percentage of jobs at the GS–12 and above level are held by minorities and women, and how do these figures compare with last year's percentages?

Dr. JENKINS. We can submit that for the record. At the GS/GM–15 level, minorities and women make up 8 percent. At the GS/GM–14 level, minorities and women make up 11.1 percent. If you would like a summary from 12 and above, we can submit that for the record.

[The information follows:]

In fiscal year 1987, minorities and women at NASA held 2,495, or 18.8 percent, of the jobs at GS–12 and above, and 5,928, or 57.3 percent, of the jobs at GS–12 and below.

In fiscal year 1986, minorities and women held 2,197, or 17.2 percent, of the jobs at GS–12 and above, and 5,002, or 56.2 percent, of the jobs at GS–12 and below.

Thus, minorities and women increased in both number and percent in both jobs at GS–12 and above (+298; +1.6 percent), and in jobs at GS–12 and below (+326; +1.1 percent).

Senator PROXMIRE Again, have you made a comparison with other agencies?

Dr. JENKINS. We think we are pretty comparable, especially in the kinds of progress we have been making each and every single year. We have been able to increase each of the specific minority groups and in all occupational areas and on all grades levels each year most of the time, and so we think that we have been continuing our progress.

Senator PROXMIRE. That 8-percent level that you gave me, what is that, for GS/GM–15?

Dr. JENKINS. Yes, GS/GM–15.

Senator PROXMIRE. That does seem to be dramatically low. It means 92 percent are white men.

Dr. Jenkins. Right. I believe you would find that true throughout the federal government.

Senator Proxmire. It is certainly true in the U.S. Senate. [Laughter.]

Dr. Jenkins. Yes. There is also a factor that contributes to that. Minorities and women were moved more recently in the disciplines where they had not been traditionally. So most of them have been hired at entry level professional ranks and are proceeding and progressing careerwise through the upper levels.

Senator Proxmire. Dr. Fletcher, can you or Dr. Jenkins tell me, in specific terms, how you intend to improve these percentages?

Dr. Fletcher. We have a broad program of doing two things: One is improving on the percentage of the supply of minorities and women that come out of the universities.

Senator Proxmire. How do you do that? NSF is working on that, too, by the way.

Dr. Fletcher. By more intensive recruiting, and we do reasonably well.

Senator Proxmire. I thought you said you tried to improve on the supply that comes out.

Dr. Fletcher. That was the second point. The first point is to get a larger percentage of the supply, and the other one is to increase the supply.

Senator Proxmire. Increasing the supply is probably more important.

Dr. Fletcher. Yes, and we have a large number of activities in this arena which Dr. Jenkins can elaborate on, and I participate personally in a lot of these. We have programs in predominantly black universities that are encouraging blacks to go into space activities; encouraging blacks, for example, to go into science and engineering. Those programs are very successful. We get our share, of course, of the ones that we encourage.

MINORITY ASTRONAUTS

Senator Proxmire. How many black astronauts have we had?

Dr. Fletcher. I think we have four.

Admiral Truly. We have four.

Dr. Fletcher. Four, counting the recent one.

Senator Proxmire. Four out of how many?

Dr. Fletcher. Out of 100?

Admiral Truly. We have less than 100 now. We have about—I am going to guess—between 75 and 80.

Senator Proxmire. I am surprised that is not higher. Blacks have done well.

Dr. Fletcher. Well, when we started our program, I am sure you remember.

Senator Proxmire. I am sure you worked on it, but blacks have done so extraordinarily well in anything that requires physical capability, marvelous, and they have done better and better in intellectual areas, too, and 4 percent does seem to be a low percentage for astronauts.

Admiral TRULY. We have been very proud of the ones that have competed, and we have had a number of blacks and minorities that have gone through the winnowing down process that eventually had led to selection. But at the present time, we do have, I believe, four blacks.

Dr. FLETCHER. Mr. Chairman, I might just tell you that Dr. Jenkins deserves a hero's award for the blacks that are in the program. When we first looked at this problem back when you and I first discussed this, we found that the blacks weren't interested; they thought NASA had no interest in black astronauts.

Senator PROXMIRE. That is the thing. The astronauts are so visible. If you could have more black astronauts, that would help.

Dr. FLETCHER. That is right, and she really went the extra mile. We employed the services of a member of the Star Trek group, the Star Trek name. Her name is Uhura. Her real name is Nichelle Nicole. She went out personally in the black communities and stirred up interest. Dr. Jenkins helped NASA launch this effort, and before long, we had a lot of blacks and women applying for positions in the astronaut group.

I think we have come a long way, but we have got further to go; you are quite right.

WOMEN ASTRONAUTS

Senator PROXMIRE. How about women?

Dr. FLETCHER. Women, also. I don't know how many women are in that program.

Admiral TRULY. I am not sure. We have a number of women that are in the astronaut force today. As a matter of fact, today, we have six crews named for the first six or the next six shuttle flights, and we have three women and one black that are on those crews, and when you subtract the fact that three of those crews are DOD and they are all military, we have been competing extremely well.

PERCENTAGE OF WOMEN IN MILITARY

Senator PROXMIRE. The military has done pretty well in comparison. Back in 1967, 1 percent of the U.S. military, uniformed personnel were women. Today, it is 10.8 percent, more than any other country in the world. It has greatly improved the quality of our personnel, because the standards are higher. You have to be a high school graduate if you are a woman. On their intelligence tests, they do better. They do better on AWOL, all the objective criteria. Women have done extraordinarily well in the military.

But 10 percent in the military would suggest that the fact that you have DOD personnel shouldn't be a handicap.

Admiral TRULY. If I could put on my Navy uniform, we are very proud of the military, of our record. It is, as Dr. Fletcher mentioned, though, very difficult. As a matter of fact, the Navy, I know from my personal experience, that the Navy competes very hard but has a hard time competing for the few people available—for example, nuclear propulsion, the highly technical fields—just because of the availability.

Senator PROXMIRE. We have 225,000 women in the military.

Admiral TRULY. Yes, sir.

Senator PROXMIRE. Compared to about 10 percent of that 20 years ago. So the situation has changed so dramatically, I didn't appreciate that until I saw those statistics a few days ago, but I think there is a greater opportunity in the works.

AVERAGE SALARY COMPARISON

Let me ask you this, Doctor, the last question. What are the average salaries of white men, minority men, white women and minority women at the GS–12 and above level and the GS–12 and below level?

Dr. FLETCHER. I don't know if Dr. Jenkins has that handy.

Dr. JENKINS. We will submit that for the record. We have looked at the average grade, and you realize, of course, there has been a gap, because there are more white males at higher levels. We have been able to close that gap, just slightly, each year. So it still exists, but we are closing. We will submit actual figures.

Senator PROXMIRE. Do you have any idea what it is?

Dr. JENKINS. There is about a one-grade difference between nonminority males and minorities and almost a two-grade difference between women and nonminority males.

Senator PROXMIRE. So what is the difference, roughly? Is it 20 percent higher for white men than it is for black men?

Dr. JENKINS. We can submit that for the record.

Senator PROXMIRE. Submit that.

Dr. JENKINS. In terms of the average salary.

Senator PROXMIRE. Submit that for men and women.

Dr. JENKINS. Yes; we will submit that for the record.

[The information follows:]

For fiscal year 1987, the average salaries of various groups of NASA employees at GS–12 and above levels, and at GS–12 and below levels are shown below:

	GS–12 and above	GS–12 and below
White men	$51,103	$32,588
Minority men	$46,040	$29,717
(As percent of white men)	(90.1)	(91.2)
White women	$41,346	$24,177
Minority women	$39,755	$22,716
(As percent of white women)	(96.2)	(94.0)

SUBCOMMITTEE RECESS

Senator PROXMIRE. Thank you very, very much. Once again, we sang our swan song yesterday, but it has been a great pleasure working with you.

The subcommittee will stay in recess until Monday, April 11, at which time the subcommittee will take testimony from the Environmental Protection Agency.

[Whereupon, at 11:44 a.m. Wednesday, March 30, the subcommittee was recessed to reconvene at 10 a.m. Monday, April 11.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

TUESDAY, APRIL 12, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC

The subcommittee met at 10 a.m. in room SD–124, Dirksen Senate Office Building, Hon. William Proxmire (chairman) presiding.

Present: Senators Proxmire, Leahy, Lautenberg, Mikulski, Garn, Grassley, and Nickles.

ENVIRONMENTAL PROTECTION AGENCY

STATEMENT OF LEE THOMAS, ADMINISTRATOR

ACCOMPANIED BY:

- **JACK MOORE, ASSISTANT ADMINISTRATOR FOR PESTICIDES AND TOXIC SUBSTANCES**
- **REBECCA HANMER, ACTING ASSISTANT ADMINISTRATOR FOR WATER**
- **CHARLIE GRIZZLE, ASSISTANT ADMINISTRATOR FOR ADMINISTRATION AND RESOURCES MANAGEMENT**
- **JIM BARNES, DEPUTY ADMINISTRATOR**
- **WIN PORTER, ASSISTANT ADMINISTRATOR FOR SOLID WASTE AND EMERGENCY RESPONSE**
- **JOY WILSON, ASSISTANT ADMINISTRATOR FOR EXTERNAL AFFAIRS**

BUDGET REQUEST

Senator PROXMIRE. The subcommittee will come to order. Our first witness today will be Lee Thomas, Administrator of the Environmental Protection Agency.

Administrator Thomas, it is a pleasure to welcome you and your colleagues this morning. You are requesting a total fiscal year 1989 appropriation of $4.8 billion, a decrease of 5 percent below your current level, but excluding the construction grants program, your request is a 5-percent increase over the current estimates.

Your budget proposal includes a reduction of $800 million—35 percent—in the construction grants program. That level of funding assumes a $12 billion phaseout of the program by 1994 rather than the $18 billion phaseout authorized by the Clean Water Act. This is, as you know, an issue of concern to many, and the subcommittee will take a close look at this proposal. I note also that you have proposed the termination of funding for a popular $40 million school asbestos abatement program.

Those decreases are offset by recommendations for major increases in the Superfund budget, which is slated for a $472 million increase, an increase of $51.6 million in the pesticides program, and a $36 million increase in the leaking underground storage tank budget.

Senator Garn?

Senator GARN. Thank you, Mr. Chairman. I have no opening statement. I came to hear what Mr. Thomas has to say this morning.

Senator PROXMIRE. Before you proceed, Mr. Thomas, I would like to insert a statement Senator D'Amato forwarded to the committee for insertion in the hearing record.

[The statement follows:]

STATEMENT OF SENATOR D'AMATO

Mr. Chairman, I would like to welcome to the committee this morning the distinguished Administrator of the Environmental Protection Agency, Lee Thomas. I look forward to your testimony.

The EPA's commitment to protect the public's health and environmental welfare is a monumental task. There have been many environmental issues that have captured the nation's attention in recent years. For instance, back in 1986 the ill-fated journey of the Long Island garbage barge received a great deal of media attention. The garbage barge helped to highlight the seriousness of the garbage crisis faced in every state in the nation. Municipalities in every state are faced with landfills that are almost filled to capacity and incinerators that present various environmental problems. The bottom line is that we need a national policy to manage this mounting garbage crisis.

Another issue which is particularly relevant to the coastal areas of my state is the problem of floatables washing up on Long Island's beaches and causing beach closings during the busy summer months In one incident at East Atlantic Beach in Nassau County last summer, the refuse that washed ashore was identified as hospital waste and included blood vials, surgical tubing, and discarded syringes with needles attached. This type of an incident should not be allowed to occur. EPA monitoring and enforcement activities should be increased to prevent this from happening again this summer.

In 1986, Congress reauthorized Superfund to the tune of $8.4 billion over the next 5 years. The Superfund program is essential in that it provides the Federal Government with the authority to respond to emergencies involving hazardous substances and develop long-term plans addressing the most serious hazardous waste problems. There are many sites in New York State that are either on the national priorities list or waiting to get on that list. The problem is that there are too many sites needing attention and not enough money to act at each site. I'll have some questions for Mr. Thomas regarding Superfund when he completes his testimony.

Thank you, Mr. Chairman.

INTRODUCTION OF ASSOCIATES

Senator PROXMIRE. Mr. Thomas, you may go ahead and summarize your prepared statement with the understanding that it will be included in the record in its entirety. You may introduce the people you have with you at the table.

Mr. THOMAS. Thank you, Senator. I appreciate the opportunity to be with you today. Let me take a minute to introduce the staff members I have with me. Starting on my far left is Jack Moore, Assistant Administrator for Pesticides and Toxic Substances programs; Rebecca Hanmer, Acting Assistant Administrator for Water Programs; Charlie Grizzle, Assistant Administrator for Administration and Resources Management. On my right is Jim Barnes, Deputy Administrator; Win Porter, Assistant Administrator for Hazardous Waste programs; and Joy Wilson, Assistant Administrator for External Affairs.

Additionally, in the rows behind me, I have many additional staff, both assistant administrators and their deputies, who are prepared to respond to questions as are all of us when we get to the question period.

BUDGET OVERVIEW

If I could, just briefly, summarize and maybe make a few additional points on the budget, then we will be prepared to respond to any questions you or any members of the committee may have.

I appreciate the opportunity to present this budget. It is the seventh opportunity I have had to come before this subcommittee and present a budget. The first two were for the Federal Emergency Management Agency, and the last five have been with the Environmental Protection Agency.

The budget, as you indicated, is a budget that reflects both increases and decreases. As we were developing the 1989 budget, we had to take into account the 1988 budget. We developed our operating plan for 1988 during the same time frame that we were making final preparations on our 1989 submission. We had to take into account some of the actions that were taken by Congress in the final days of the 1988 budget process, and there were some bridging opportunities that we had to look for in the 1989 budget. That had an impact on how we finally shaped our 1989 budget in some respects.

Additionally, we were operating within the Congressional-White House agreement for 1988 and 1989. That also constrained how we shaped our 1989 budget, as well as the 1988 budget, particularly as we looked at both targets and particularly target issues as they related to outlays.

We developed our overall 1989 budget, consistent with that agreement. We identified four major objectives that are incorporated into the 1989 budget: First, to meet the statutory priorities, as well as identify emerging priorities within the Agency.

Second, a commitment to expand our research and development programs. Third, to continue to support a strong state partnership through our state grant programs. Fourth, to commit the majority of the increased funds for the Superfund program to fund remedial actions under that program or the final phases of cleanup as the first priority under the Superfund program.

Overall, we developed our 1989 budget with these constraints and with these objectives. It ended up representing a series of tough choices, some of which you indicated in your opening statement. We had to make decisions about increasing research and development and what that meant for our other operating programs, and then within research and development, we had to make decisions of which research programs to commit to, long term versus short term.

We had to make decisions on Superfund. We were committed to ensure that the program operated at full capacity and was fully consistent with the authorized levels that Congress incorporated into the statute when it was reauthorized 1½ years ago.

We had to deal with pesticide disposal issues, which has been a difficult one for the Agency to come to grips with, particularly from a funding point of view, and you see that reflected in our budget.

We also had to take into account new emerging problems like the solid waste problem that many cities are facing and the role the federal government should play in global problems such as stratospheric ozone depletion and global warming. In order to deal with some of those issues, we had to reduce some other areas, and that is where the tough choices came.

As I said, we used a number of directions in how to make those choices, statutory directions, a risk-based approach from a comparative risk analysis we had taken in the Agency, and overall came to grips with the budget and have presented what I think is a strong overall budget for you to consider.

As you said, it represents $4.8 billion in total, which splits into three categories. Our operating budget is about $1.6 billion, and that is a slight increase of about 3 percent. Our Superfund program, about $1.6 billion, is an increase of about 7 percent. Construction grants program, $1.5 billion, is a decrease of about 30 percent.

Overall, 14,571 work-years and $4.8 billion, we think a strong budget that reflects the priorities in our statutes as well as the priorities that we see as we look across the environmental issues that we deal with. It is also a budget that reflects fiscal reality and the fact that we have to make difficult choices on how much we can afford across all these programs.

BUDGET HIGHLIGHTS

I will conclude by saying there are clearly three major issues that have already been identified. I think you highlighted several of them. One of them is the "Construction grants" account. Our $1.5 billion request does reflect the administration's commitment to a $12 billion figure for phaseout of that program as opposed to the $18 billion figure that Congress authorized in its reauthorization of the Clean Water Act last year.

It is a debate that we had last year; it is consistent with the overall proposal that I submitted to Congress last year for the construction grants program. It was a difficult choice to make. We deliberated on it at length. We feel the $1.5 billion is as much as we can afford, given the other priorities.

Second, the Superfund program. It is a program that now, in and of itself, is as large as the entire operating budget for the rest of the Agency. It requires a significant commitment of resources, management time, and dollars to continue that program at its current level. It is operating now at a level that will use the authorized funds during the 5-year period, and I believe we are operating consistent with the overall outputs and schedules that Congress anticipates.

And finally, the operating accounts, the choices that we had to make in the operating account were most difficult, probably because of the division that continues to develop between authorizing committees and appropriating committees. The same kind of debates that are had in Congress about how much to put in a program, we have in the administration.

Having to make those decisions is difficult. We feel we have done it in a rational way. I appreciate the opportunity to present this budget to the subcommittee. I look forward to discussing it with the subcommittee and trying to respond to the issues and questions that all members of the subcommittee have about it.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF LEE M. THOMAS

Mr. Chairman and members of the committee: I appreciate this opportunity to discuss the President's 1989 budget request for the Environmental Protection Agency.

This budget request provides for growth in programs that are vital to meeting the most critical environmental challenges facing EPA. In developing our 1989 budget, we have directed resources towards programs I believe will help us meet these significant challenges and demonstrate our public commitment to environmental protection. We have built EPA's budgt on the following four themes:

—Direct resources to meet EPA's statutory responsibilities and emerging environmental priorities.

—Expand EPA's commitment to research and development programs that support our regulatory efforts.

—Continue our essential partnership with the states.

—Undertake long-term and permanent remedial response actions at Superfund hazardous waste sites.

OVERVIEW

In 1989, our total dollar request is almost $4.8 billion. In our operating programs we are requesting $1.6 billion and 11,730 workyears. In Superfund, we are requesting $1.6 billion and 2,750 workyears. When we include anticipated funding from prior appropriations, our total Superfund program in 1989 will be approximately $1.7 billion which is $200 million over our planned program in 1988. This level funds all projects ready for clean-up. Funding for the leaking underground storage tank [LUST] program totals $50.0 million and 90 workyears. Combined funding for all of these programs—our operating programs, Superfund, and LUST—represents an increase of $159 million or 5 percent above our 1988 level.

The President's budget also includes $1.5 billion for the construction grants program to be divided evenly between construction grants and state revolving funds. This request, when combined with previous appropriations, is consistent with the administration's $12.0 billion phase-out plan. The $12.0 billion program provides the federal share to complete ongoing projects begun with federal funds and to bring existing facilities into compliance with secondary treatment requirements.

I would like to elaborate further on the key initiatives that are central to the President's 1989 budget request for EPA.

MEETING EPA'S STATUTORY REQUIREMENTS

In 1989, we will emphasize our efforts to meet EPA's statutory responsibilities. I have directed resources to meet the most critical challenges facing EPA.

We will continue to focus on the implementation of our requirements under the reauthorized Clean Water Act. We have provided increases for programs that will protect our most valuable water habitats, especially wetlands and near coastal waters. We will also increase our efforts to control discharges of toxic and hazardous pollutants and provide additional technical assistance to states.

In our air and radiation programs, the 1989 budget directs resources towards meeting the requirements of the national ozone and particulate matter (PM_{10}) attainment strategy. We will also increase our efforts to reduce the risk from radon gas and continue our efforts to develop national and international solutions to the problem of stratospheric ozone depletion.

Our efforts in the hazardous waste programs will emphasize waste management regulations, guidelines implementation, and corrective actions to produce a comprehensive approach to the national problem of hazardous and solid waste disposal.

In the pesticides program, we are requesting $60.0 million to ensure that EPA is able to transport, store, and dispose of suspended and subsequently cancelled pesticide products that are the responsibility of the federal government.

We have increased support for state cooperative agreements in the leaking underground storage tank program in 1989 with an increase of $10.1 million. Through these agreements EPA will continue to fund development of state programs to respond to this important environmental problem and will target resources to expand the number of response activities and cleanups in states with highly developed programs.

In 1989, in cooperation with the states, EPA will continue to aggressively enforce our environmental regulations, our enforcement efforts will support state enforcement programs and maintain a viable and highly effective criminal investigations program.

We are also taking steps to establish a program to encourage privatization of activities that can be more efficiently operated by the private sector. An example of this approach is the construction grants program where we will encourage private construction and operation of sewage treatment plants that are less costly and can be constructed more rapidly.

We are also not requesting funding for the asbestos loans and grants program since previously appropriated federal funding has already substantially reduced the asbestos-in-schools problem. Furthermore, many states have initiated active asbestos management or contractor accreditation programs and should be able to continue these efforts. Our efforts in the asbestos program will be to maintain other programs designed to address asbestos hazards in schools. In 1989, emphasis will be placed on providing assistance and guidance to states and schools, including implementation of management plans and establishment of inspector and management planner certification and training programs.

VIABLE AND COST EFFECTIVE RESEARCH PROGRAMS

The President's 1989 budget for EPA's research and development program totals $375.0 million and 1,848 workyears, an increase of $22.7 million and 17 workyears over 1988.

A major research and development priority is reducing the uncertainties in risk assessment so that EPA can make better informed regulatory decisions and establish a sound basis for our research priorities. In 1989, $10.0 million will be devoted to projects designed to reduce uncertainties in risk assessments to improve our decisionmaking capabilities.

Our research efforts will also be increased significantly to support the administration's initiative on stratospheric ozone depletion. This research will enable the federal government to make informed decisions about the risks posed by ozone depletion in preparation for the 1994 scientific assessment required by the Montreal Protocol.

CONTINUING OUR ESSENTIAL PARTNERSHIP WITH THE STATES

In 1989, funding for the state grants portion of the budget totals $290.0 million, a slight increase above 1988. EPA will continue to work with the states to assist in developing strong programs to carry out the states' responsibilities. The 1989 President's budget recognizes that continued cooperation of the states is necessary to meet our statutory requirements.

EMPHASIS ON LONG-TERM SOLUTIONS AT SUPERFUND SITES

By the end of 1989, we anticipate that planning work will be underway or completed on nearly 900 of the national priority list [NPL] sites. Our focus, however, will continue to shift toward expanding the number of sites in the final and most important phases of cleanup. This will be accomplished by moving a steady stream of fund-financed projects to actual cleanup, while also overseeing a growing number of new responsible party actions. In 1989, we anticipate managing or overseeing a total of 145 new remedial designs and 85 new constructions of which 75 designs and 50 new constructions will be fund-financed. These actions are consistent with the mandatory remedial construction schedule set forth in the Superfund Amendments and Reauthorization Act [SARA].

In the emergency response program, expanded authorities will allow us to pursue more complete removals which are consistent with the long-term remedy at an NPL site. In our remedial program, we plan to complete over 20 construction projects, while responsible parties are expected to add another 10. The completion of these activities represents a major step toward protecting our environment and the public health from the dangers posed by past hazardous waste practices.

In our research program, we will increase efforts to explore alternative and innovative treatment technologies that are a key to achieving permanent solutions at NPL sites.

Finally, we have broadened our enforcement efforts significantly. We will achieve more responsible party settlements through aggressive use of our expanded authorities under SARA. We will also pursue more intensive cost recovery efforts to recoup costs previously paid by the trust fund.

CONSTRUCTION GRANTS TRANSITION

An important aspect of the 1989 President's budget is our plan to implement the transition from construction grants to state revolving funds [SRFs] for wastewater treatment assistance. In 1989, our $1.5 billion request will ensure that adequate financial resources are available to continue progress in constructing municipal facilities needed to comply with the Clean Water Act.

State revolving funds will permit states to provide various forms of local assistance, including low interest/long-term loans, refinancing, loan guarantees and bond insurance. This approach will also provide states with increased control and responsibility in the construction of municipal wastewater treatment facilities. By 1994, the state revolving funds will be self-sufficient and federal funding will have been phased out.

CONCLUSION

The budget I have put forth today reflects many difficult decisions. After many months of careful deliberations, our budget request represents a sound strategic approach to meeting EPA's statutory responsibilities and emerging priorities while providing the maximum environmental protection possible.

The process we followed to develop this budget was identical to our efforts in preparing our 1988 request. In our enacted budget, however, many of the critical needs we identified were sacrificed to fund narrowly focused environmental programs. These targetted congressional initiatives hamper our ability to focus on, and meet, our national environmental agenda and statutory responsibilities.

Many of the congressional add-ons are of specific local concern which are not consistent with national environmental priorities. Funding of these initiatives limits our ability to meet more critical national activities. I would, therefore, ask that in your deliberations on our 1989 request you focus on the national priorities identified in the President's request. These priorities that we have identified are essential to the long-term protection of human health and the environment.

In summary, I believe that in these times of limited federal resources we have provided the growth necessary to meet the nation's critical environmental priorities. In this budget the President has again demonstrated a commitment to push forward to better understand and control the many existing and emerging issues facing the nation. I am optimistic that this budget will receive your prompt and favorable consideration.

I will be happy to answer any questions at this time.

CONGRESSIONAL DIRECTIVES

Senator PROXMIRE. Thank you very much, Mr. Thomas. On March 15 the Office of Management and Budget issued a memorandum concerning wasteful, unnecessary, and low-priority spending projects and directives contained in the fiscal year 1988 appropriations bill. OMB asked that agency heads review the listing and report back as to whether or not the agency intended to follow the congressional directive.

Six EPA projects were included in this list: The cleanup of Boston Harbor; the New York Bight restoration; the San Diego wastewater reclamation project; the Spokane Aquifer study; the Lake Pend Oreille/Clark Fork River study; and the Tufts Center for Environmental Management.

I think it is very important, and I am sure other members of the Committee and other Members of the Senate do, for agencies to respect congressional directives contained in report language. I am curious as to what you intend to do with those projects. Will they be undertaken, as specified in the conference report accompanying the fiscal year 1988 bill?

Mr. THOMAS. Clearly, Mr. Chairman, we are in the midst of reviewing those projects with OMB now. You have characterized their memo very accurately. I have indicated to them that I intended to go forward with those projects, consistent with direction from Congress. They have indicated to me that they don't feel that I should do that, and we are now in the midst of resolving that difference of opinion.

I might add that they have changed their opinion on the New York Bight project. They agreed that we should go forward with that upon reviewing the additional material I submitted. I am also submitting additional material on the other projects and, hopefully, we will be able to resolve those.

Senator PROXMIRE. At the present time, Boston Harbor, San Diego, Spokane, the Fork River study, the Tufts center, they haven't moved on that, but you are still working on it?

Mr. THOMAS. We are still working on it.

Senator PROXMIRE. Will you give us a report as soon as you get information on that?

Mr. THOMAS. Yes; we certainly will.

GAO MANAGEMENT STUDY

Senator PROXMIRE. Mr. Thomas, my staff has been briefed on a GAO draft report entitled, "Environmental Protection Agency: Protecting Human Health and the Environment Through Improved Management." This report identifies ways EPA can further its efforts to achieve measurable environmental results; build a more effective EPA/state partnership; and improve financial and information management systems.

GAO discussed with my staff the importance of stating Agency goals in measurable, quantifiable form so the Agency may assess the progress it is making in dealing with environmental problems.

I understand GAO suggests that a framework linking EPA and state activities, such as inspections and corrective actions, to environmental quality measures, such as ambient concentrations or emissions discharges, would improve monitoring activities. What specific efforts have you taken or do you plan to take to adopt such a framework?

Mr. Thomas. Mr. Chairman, first, I would say that I thought that the effort on the part of GAO was a very productive effort of interaction between the Agency and GAO. It was a comprehensive management review of the Agency and we had ongoing interaction during the process. They didn't wait until the final report to provide us with insights as to how we could improve the management of our programs from their point of view.

The particular recommendation that you have noted, which is trying to gear Agency actions in programs to environmental indicators, is one that I agree with strongly. We have had an effort in the Agency underway for several years to try to better define environmental indicators in each one of our media programs, and the entire program direction as well as evaluation of programs to do that.

I think their recommendation about trying to tie that more closely with our state counterparts that actually administer many of the programs that we have delegated is a good recommendation.

We have a followup effort underway directed by our policy office to try to work through and see how we can implement that linkage between state and federal programs as they revolve around environmental indicators.

Senator Proxmire. The key adjective in my question was "measurable."

Mr. Thomas. Exactly.

Senator Proxmire. We want it to work in areas where we can measure the progress or lack of progress that is being made.

Mr. Thomas. That is difficult. In some media, it is easier than others. For instance in the air media, we have used measurable progress for a long time. When you think in terms of the ambient air quality standards, we now can stand back and say, "Over the last 10 years, we reduced ambient levels of lead in the air by 90 percent." So we literally can measure the progress we have made by setting a standard and monitoring progress over time. Trying to do that in other media is more difficult.

For instance, in hazardous waste, we are now trying to look at how to make waste minimization a measurable indicator of progress as opposed to just looking at things like how many permits have been issued and how many corrective actions have been taken.

We are trying to identify measurable indicators in each one of our programs.

NSF HAZARDOUS WASTE STUDY

Senator Proxmire. You plan to spend $58 million on research into techniques for cleaning up existing hazardous waste sites, another $44.7 million on general hazardous waste prevention and control, and $5 million for hazardous waste research centers.

The National Science Foundation, which is also under the jurisdiction of this subcommittee, and they have testified before us, have granted $2 million on an engineering research study to fund 12 months of work on hazardous substance control. The research of the center will, and I quote, "...include studies of emerging and future technologies for the control of hazardous substances as well as strategies for managing and remediating sites already contaminated with hazardous substances.'"

During the course of that NSF hearing last month, I questioned the agency as to why NSF should study this center rather than EPA. Apparently, NSF asked EPA to participate in the center, and EPA chose not to do so.

Can you tell us why you decided not to take part in the funding of this center?

Mr. THOMAS. No, Mr. Chairman, I am afraid I can't. I am not familiar with that issue.

Senator PROXMIRE. Can any of your distinguished colleagues at the table or behind you?

Mr. THOMAS. Dr. Newill is Assistant Administrator for Research and Development, and he also is unfamiliar with that particular project. We would be more than happy to provide an explanation in detail to the chairman and committee members.

Senator PROXMIRE. We would like to have that for the record.

[The information follows:]

NSF HAZARDOUS WASTE RESEARCH CENTER

On February 26, 1986, EPA received a letter from the Director of the National Science Foundation requesting that EPA provide support to a research center on hazardous waste control that NSF was establishing at the University of California, Los Angeles [UCLA]. In our response to NSF we indicated that we were supporting eight ongoing research centers of our own; therefore, we would not provide additional funding to support the NSF center at UCLA.

Although EPA did not provide financial support for the establishment of the UCLA center, EPA scientists do serve on advisory groups and steering committees for the center.

SUPERFUND PROJECTS COMPLETED

Senator PROXMIRE. You are requesting $1.6 million in new authority and $100 million in prior year funds for the Superfund program in fiscal year 1989, an increase of $200.5 million and 117 work-years over the current operating level.

In last year's House hearings, Dr. Porter and Chairman Boland discussed the possibility of Superfund becoming a bureaucratic nightmare, thereby delaying cleanups. At that time, Dr. Porter said, and I quote, "I am reasonably optimistic that if we push real hard in the next 6 months to a year we can get a lot accomplished. For example, we have 100 projects that are in the final cleanup phase. My top priority right now is to go ahead and complete these projects. The administration shares this priority."

How many of these 100 projects are completed today and how many will be completed by the end of the fiscal year?

Mr. THOMAS. Allow me to have Dr. Porter respond directly to that. I feel we are making good progress under Superfund, but will let him give you the specific numbers.

Mr. PORTER. Senator, regarding those 100 projects, I didn't necessarily mean that they were all going to be finished this year. Those 100 projects are in various stages of construction. This year we anticipate finishing about 30 to 35 projects. We have got about 12 to 15 that have already been finished.

Senator PROXMIRE. How about the timeframe for completing the other 60 or 70?

Mr. PORTER. I think they will be finished in about the next year. We are on a track to have about 30 to 50 sites per year being finished. I think that will increase.

Senator PROXMIRE. With 100 projects at 30 to 40 year, that is about 3 years?

Mr. PORTER. That is right, but I think we could increase that base, because if you extrapolate further to the 900 sites currently on the national priorities list, it would take 30 years if you use those numbers, and that is obviously not acceptable. We have a lot of projects now that are getting to the end of the pipeline and we will be doing a lot of construction over the next year or two.

COST OF SUPERFUND CLEANUPS

Senator PROXMIRE. A year ago we were told that the average cost of cleaning up a Superfund site was about $11 million. Just 2 weeks ago, however, we heard in a report from the House Appropriations Committee that the average cost was between $21 and $30 million. Would you tell us what has happened in the last year that caused the cost of cleanup to double or more than double?

Mr. PORTER. I am not sure it has doubled, Mr. Chairman. Specific numbers are a little hard to identify because these sites are done in a number of phases. My guesstimate right now is about $15 to $20 million per site.

Senator PROXMIRE. That is almost close to doubling. It was $11 million before.

Mr. PORTER. A cost of $11 to $15 to $20 million. Let's call it 50 to 100 percent. I think what has happened, Mr. Chairman, is the law that passed a year and a half ago required us to do a lot of additional things. It requires permanent cleanups and treatment to the maximum extent practicable. The remedies we are dealing with now tend to be more expensive remedies than they were before the new Superfund amendments of a year and a half ago.

TIME REQUIRED FOR SUPERFUND CLEANUPS

Senator PROXMIRE. There are about 950 toxic waste sites on the Superfund national priorities list. The time it takes to complete cleanup of these sites appears to be getting longer instead of shorter. The most favorable recent assessment is that it takes 24 months just to complete the remedial investigation/feasibility study. Other reports have put the time for this study and design phase as high as 5 years. What has caused the timeframe to lengthen and what specific steps are you taking to remedy the situation?

Mr. PORTER. Mr. Chairman, we have done a number of things. First, I have told our people that I want to do these studies in 18 months. So we have had a top-down direction that in general, we want to do the studies in 18 months. That is beginning to take effect. There is no question that some of the studies are taking too long, but I want to tell you that they are very complicated studies. There is a lot of community interaction on these studies.

Senator PROXMIRE. You say 18 months?

Mr. PORTER. Yes; 18 months is the goal we are shooting for in the future.

Senator PROXMIRE. The most favorable recent assessment we have is 24 months and other reports put it at 5 years.

Mr. PORTER. Some individual studies have taken 4 or 5 years. That is by no means the average. The average is about 24 months right now. We are trying to move that back to 18 to 20 months. We have a lot of studies that have been done in those kinds of timeframes.

Mr. THOMAS. I will just add, Mr. Chairman, I have been involved in trying to manage that program for a little over 5 years. During that 5-year period of time, I have worked to try to reduce the amount of time for those individual engineering studies at sites. I must say that for a variety of reasons, while that is a very important goal to continue to press toward, there are a number of factors pressing in the other direction.

Senator PROXMIRE. Congressional Research Service are the ones who told us that this takes 24 months to 5 years. There seems to be a conflict.

Mr. THOMAS. I think the average of 24 months is an accurate figure, and I think as long as five years on some of these sites is probably also an accurate figure.

Senator PROXMIRE. How many sites have been removed from the national priorities list to date? How many do you expect to remove in the next 5 years?

Mr. PORTER. To date, we have had about 40 completions, meaning sites where we have either completed construction or they have been deleted from the national priorities list. Including the new batch of sites in the Federal Register, there are about 25 sites that are totally finished. These 25 sites will be literally deleted from the National Priorities List. Another 15 to 20 sites have had the construction completed or are in some kind of long-term remediation.

NUMBER OF NATIONAL PRIORITIES LIST SITES

Senator PROXMIRE. I am not sure whether that answers the next question. Maybe it does. What is your latest estimate of the ultimate number of national priorities list sites that will need to be cleaned up and the cost of that cleanup?

Mr. PORTER. The number of ultimate sites to be cleaned up?

Senator PROXMIRE. Yes, sir; the relevant number of national priority list sites that will need to be cleaned up and the cost of the cleanup.

Mr. PORTER. We have 950 sites on the national priorities list now; we have about 200 additional sites we will be putting on shortly. Do you mean looking 5, 10, 15 years in the future?

Senator PROXMIRE. Whatever you can tell me about the ultimate number of sites that need to be cleaned up and their cost.

Mr. PORTER. My sense is as far as the national priorities list is concerned, we are talking several thousands of sites over a 15- or 20-year period.

I think what we are going to do is work through in this 5-year period, ending in 1991.

Senator PROXMIRE. How about the cost?

Mr. PORTER. The cost could be many billions of dollars. We will be spending $8.5 billion over the 5-year reauthorization period.

Senator PROXMIRE. Can you be a little more accurate? That sounds like the kind of answer I give when they ask me what the budget is going to be.

Mr. PORTER. I don't think we have tried to estimate the ultimate cost of the Superfund program. As Lee said, we are certainly going to spend the $8.5 billion or close to it in this 5 years. You can project from there in terms of those 5-year increments. I do think over the next 5 years or so, what we are doing, we are dealing with the worst sites first. I really do believe that. There are thousands of sites out there that need to be addressed, but I think we are prioritizing the worst sites at the front end of the program. I hope that over the next 5, 10, or 15 years, while we will have additional sites, some of which will take a long time because of such things as pumping and treating ground water to be cleaned up, we will not be finding in 5 or 10 years the difficult sites we are finding now.

POTENTIALLY RESPONSIBLE PARTIES VERSUS FUND-FINANCED CLEANUPS

Senator PROXMIRE. What percentage of your total estimated cleanup costs will come from potentially responsible parties and how much will be absorbed by the fund in the absence of the financially viable penalties?

Mr. PORTER. There are two answers to that; we are doing two things. We are trying to get responsible parties to pay for the work or do it up front. For about one-third of the sites we are getting settlements where responsible parties either do the work or pay for it.

Senator PROXMIRE. About one-third?

Mr. PORTER. About one-third. I would like to get that up to about half.

Mr. THOMAS. We are also pursuing the cost recovery stage. In other words, where we do the work with money from the fund, we then go back and recover the cost from the responsible parties. That is a longer term process, but we are beginning to see the cost recovery stage now increase in terms of money coming into the fund.

Senator PROXMIRE. Senator Garn?

LEAD-BASED PAINT LEGISLATION

Senator GARN. Thank you, Mr. Chairman.

Mr. Thomas, Members of Congress and interest groups often form proposed legislation before those committees or agencies that are more likely to give them favorable consideration.

Certainly, that often makes for a patchwork quilt of differing statutory regulatory standards covering identical matters.

I recall that with respect to asbestos, there are different standards between EPA and OSHA, which were a matter of some concern. I might suspect that the reason the EPA ended up with the Asbestos in Schools Program was that your Agency appeared to be more willing to take action than did the Department of Education.

A similar situation has now arisen with respect to lead-based paint and the recently enacted Housing Authorization Act. We put in stringent inspection removal requirement for such paint in public housing. Concerns have been raised that these statutory requirements are not only virtually impossible to meet but may also require remedial action in cases where no real exposure exists and mandate removal actions which actually create or aggravate exposure to asbestos.

Have you had any involvement in the formulation of this legislation at all, any input in what we did on the housing bill?

Mr. THOMAS. Senator, not to my knowledge. Jack Moore, who is the Assistant Administrator for Pesticides and Toxic Substances, may well have knowledge or involvement.

Mr. MOORE. No.

Mr. THOMAS. I don't believe we had any involvement in the legislation. We have had a lot of involvement in our Agency in dealing with the issue of lead in the ambient environment. As you know, we have dealt with the phaseout of lead in gasoline and other issues like that, but I don't believe we had any involvement in lead-based paint legislation.

Senator GARN. Well, that is my point. You have had a lot of experience in the problem of lead, and here, once again, we are creating another area to solve the same problem. I just don't understand why Congress is constantly doing that. We recognize there is a problem, how do we deal with it, and then we end up with an agency that is supposed to be environmental protection, but we are creating in a housing bill a problem for lead-based paint in public housing.

LEAD IN SOIL

Mr. THOMAS. We are also dealing with lead, by the way, in a cleanup fashion under the Superfund program. There were several pilot projects that were authorized under the Superfund program for cleanup of lead in soil, largely from lead-based paint, and we are now in the process of going forward with several pilot cleanup efforts to clean up contaminated soil, largely in inner city areas, where there is heavily contaminated soil from lead-based paint.

LEAD-BASED PAINT IMPLEMENTATION

Senator GARN. Recognizing that you had no involvement in the formulation of the legislation since its enactment, have you had any opportunity to review it, and what is HUD doing to implement it?

Mr. MOORE. Senator, several questions were briefly raised in the House appropriations hearings a couple of weeks ago, and just yesterday afternoon I received a letter requesting that we take a look at the proposed regulations that you are referring to that are being promulgated under this congressional change to the Lead-Based Paint Act.

I think the idea as expressed by some of the staff, was that some of the approaches we have taken on asbestos in schools, as far as building the necessary infrastructure to make sure that problems are diagnosed correctly and treated appropriately, are essential to the lead and housing issue. The letter I received yesterday afternoon asked us if we would try to specifically respond during the comment period to HUD's proposed regulation. We will try to do that.

Senator GARN. Are you aware that HUD has any expertise in this area? Do they have people that know anything about lead?

Mr. MOORE. I know that they have been involved in the Lead-Based Paint Act for a number of years, I think about a decade. I know they worked with Paxton firms in their early years, in the National Bureau of Standards, to develop the machinery to sample walls and other structures for the presence of lead. I have lost track of their work for the last 4 or 5 years since I have been with EPA. Beyond that, I can't be any more enlightening.

Senator GARN. I expect that you would agree that it might make some sense to have one agency dealing with the problem of lead rather than several.

Mr. THOMAS. I think your point about coordination and a focal point for issues in the executive branch, any branch that is dealing with an issue, is important. I am afraid, frankly, that we don't know enough about this issue to respond specifically to the mechanics of it.

I would say that our Agency has been very active on the issue of lead in the environment. We have interacted extensively with the Centers for Disease Control regarding the health aspects of lead and the environment. We have gone through that program. We also have dealt with grant programs and indoor air programs and are trying to administer those programs. As to whether or not we should pick up this program. I don't know enough about the HUD program to have an opinion on it at this point.

CONSTRUCTION GRANTS PHASEOUT

Senator GARN. With respect to the phaseout of federal grants for wastewater treatment plants, you state that you are relying on the establishment of state revolving funds as well as encouraging private construction and operation of sewage treatment plants that are less costly and can be constructed more rapidly.

Do you have specific information on the differentials in cost and time in between private ventures and that done through government?

Mr. THOMAS. We have had, over the course of the life of the construction grant program, a good bit of interaction on the issue of private operation or privatization of sewage treatment plants, and there are examples around the country, and we would be more than happy to provide information on those examples.

Senator GARN. I would appreciate it if you would supply that for the record.

Mr. THOMAS. I would be glad to.

[The information follows:]

PRIVATIZATION OF WASTEWATER TREATMENT

Even though many of the tax advantages which previously made privatizing municipal wastewater treatment facilities attractive were repealed by the 1986 Tax Reform Act, we are still trying to encourage privatization wherever possible. Previously, tax exempt industrial development bonds yielded 10- to 40-percent savings in construction costs over that of a public facility built under contract. However, those savings were reduced if the municipality chose to buy the facility from the private firm at the end of the 20- to 25-year contract term Those savings would be reduced 8 to 10 percent now and there may be no savings if the municipality chose to buy the facility at the end of the contract term.

Operations and maintenance costs are usually more cost-effectively managed by private firms under contract because of the ability of the private firm to provide necessary expertise and the economies of scale. However, larger facilities appear to be able to match the cost-effectiveness of private operation where good management expertise is available.

EPA will continue to encourage privatization of several aspects of municipal wastewater treatment. As the nature of privatization is changing in response to the changes in the tax laws, municipalities are beginning to contract for design/build and operations/maintenance while retaining ownership of the plant. Small projects are eligible for the turn-key grants under the new Clean Water Act amendments. In addition, facilities constructed with state revolving fund assistance may be sold to a private concern if provided for under the state program.

In general, EPA believes that privatization of municipal wastewater treatment facilities will be evaluated on a case-by-case basis where the function can be done better by the private sector. It appears that privatization of operation and maintenance, particularly at smaller treatment plants, offers the greatest promise in the municipal wastewater treatment field.

Mr. THOMAS. We have also established a task group within the Agency that goes beyond construction grants to look at privatization on a variety of issues.

Senator GARN. Does Davis Bacon apply to plants constructed through state revolving funds?

Mr. THOMAS. Let me ask Ms. Hanmer, the Acting Assistant Administrator for Water.

Ms. Hanmer. We have been making individual determinations on a number of federal laws that apply to the construction grants program and whether or not those laws also apply to the loans made under the state revolving loan fund. It differs from law to law. Generally speaking, the federal requirements do not apply except where a loan is funded with the federal capitalization grant itself.

Senator GARN. Does federal tax reform legislation affect the state of municipal ability to finance sewage construction with tax exempt bonds?

Mr. THOMAS. There clearly was an impact as far as tax exempt bonds are concerned with tax legislation in 1984. The issue of tax exempt status has come up recently as it related to our state revolving loan fund program in the context of a letter of credit payment approach, which we are planning to use.

The concern was raised, and it first surfaced in a publication called Bond Buyer, that this somehow constituted a guarantee, and, therefore, jeopardized tax exempt bond status for municipalities that were using this revolving loan fund that had a letter of credit behind it.

We have recently met with the Assistant Secretary of Treasury for Tax Policy, and we were hopeful that we would have the written reply last week. Now we are hopeful that we will have a reply this week that will clarify that that is not the case. We have had extensive discussions with Treasury about why we feel that is not the case; why the program should not jeopardize tax exempt status of municipalities.

He tentatively agrees with us on that, and we have written the Treasury with our interpretation, and are waiting for a written reply. Hopefully, the tax exempt status issue that has recently come up relating to state revolving funds will be clarified and it will not be an issue beyond those that were incorporated in the reforms in 1984.

Senator GARN. Thank you, Mr. Chairman.

Senator PROXMIRE. Thank you, Senator Garn.

Senator Lautenberg?

OCEAN DISPOSAL

Senator LAUTENBERG. Thank you, Mr. Chairman. Welcome, Lee, and company. I would like to look at EPA's record on ocean pollution. A sea of garbage fouled New Jersey's beaches last summer, and yet EPA is cutting almost $1 billion from sewage treatment funding. I worked hard last year to get new plastics pollution laws in the program for restoring New Jersey's coastal waters. Yet EPA is cutting the funding for this program.

The oceans are filthy and EPA is looking the other way. Take the Ocean Dumping Act. In the 16 years since Congress passed it, EPA has brought one, one criminal action. It is as if EPA is protecting the polluters more than our beaches. One of the worst polluters is New York City. Garbage sits on New Jersey's beaches and EPA does nothing about it.

How do we explain this to the fishermen in Cape May, whose livelihood is threatened by these polluted waters, a family in Sea Isle City; a vacationer in Asbury Park; a Long Branch shopowner whose business depends on summer tourism?

Why is there a lack of enforcement, and how do we defend the budget cuts that we are looking at compared to the program that was originally enacted over the President's veto?

Mr. THOMAS. Well, first, I would certainly sharply disagree with your conclusions about EPA actions on ocean pollution. As a matter of fact, I think if you would look at the record of the Agency, you will see that the Agency has moved aggressively to take ocean dumpers out of the ocean. As a matter of fact, the record of the Agency in approving ocean discharges is a good example. We have reduced ocean disposal from POTW's as well as direct ocean dumping. You will find that we have substantially restricted, and, as a matter of fact, moved away from the ocean the majority of the municipalities and others that have historically used the ocean for both discharging and dumping.

Additionally, when you look at areas like New York City and New Jersey, who still dump sewage sludge in the ocean, you see that we have put them on very sharp schedules. As you know, sludge dumping is being moved out of the 12-mile site they have been using, and we are moving them to the 106-mile site. Frankly, we are working hard to try and move them away from ocean disposal altogether. We worked hard to make sure that other communities didn't see ocean dumping as a good alternative and didn't see ocean discharge as an alternative because of our concerns about the ocean environment.

OCEAN POLLUTION ENFORCEMENT

Additionally, when you look at the enforcement actions of the Agency under ocean dumping, I don't think it is appropriate to look at how many criminal actions were brought by the Agency; I would look at how many actions were brought overall. Clearly, there are enforcement actions that are brought consistently, administrative enforcement actions.

I think the important thing is to look at who is dumping in the ocean now and who was dumping in the ocean 10 years ago or 5 years ago. You see a steady movement away from dumping in the ocean.

Finally, I would like to say that it is extremely important to note that the Agency has established a very important near-coastal areas strategy to deal with the whole issue of sensitive estuarine systems up and down the east and west coasts, the Great Lakes, and the gulf. I think the Agency is making significant strides in trying to deal with those sensitive issues.

Beyond that overall statement, I am going to let Ms. Hanmer respond. She has been working in the water programs, including ocean water programs, for a long time.

Ms. HANMER. I just want to add that the problems you are speaking of are a complicated mixture of problems caused by ocean dumping which have been greatly alleviated over the years. The problems are also caused by land-based discharges to near-coastal waters, such as combined sewer overflows.

I think it is absolutely true that we, in the cities, did not take as aggressive an approach to combine sewer overflows and storm water overflows in the 1970's when we were funding treatment works. We concentrated on secondary treatment plants and did not concentrate on funding for sewers, and we are living with some of the results now.

We have recognized a need now to shape up both our standards and our policy toward combined sewer overflows, focusing in the estuary management areas where we have established conferences.

Senator LAUTENBERG. Lee, you said we shouldn't measure this by criminal actions brought.

I understand that EPA had only 20 administrative penalties and brought five civil actions under the Ocean Dumping Act.

Now we are looking, again, at a very long period of time. Does this seem like a major enforcement effort in the course of the last 16 years?

Mr. THOMAS. Frankly, I think that the key issue as far as ocean pollution, is the one that was identified by Ms. Hanmer. I think that the results of what you have seen on the beaches of New Jersey and what we have seen in other places is certainly far more complicated than whether EPA is taking 30 actions or 20 actions as demonstrated authority.

Senator LAUTENBERG. Does the number indicate to you aggressive enforcement?

Mr. THOMAS. I think enforcement is playing a proper role as far as ocean dumping is concerned, given the fact that I don't think illegal ocean dumping in the sense of people going out in the ocean and dumping garbage is our primary problem.

Senator LAUTENBERG. It may not be a primary problem, but can it be a contributing problem?

Mr. THOMAS. Certainly.

NEW YORK CITY OCEAN DUMPING

Senator LAUTENBERG. What have you done to get New York City out of ocean dumping?

Mr. THOMAS. We are getting them out of the 12-mile site to the 106-mile site, and we are working to get them out of the 106-mile site.

Senator LAUTENBERG. It took a little legislation along the way to help move that along.

Mr. THOMAS. You have probably got a good idea of how tough that issue is in New York, just as I do.

Senator LAUTENBERG. But you don't live next door. [Laughter.]

Mr. THOMAS. I don't live next door, but I am just as committed to it as you are.

Senator LAUTENBERG. Unfortunately, when we look back over the 16 years, I don't see the kind of action that confirms your commitment, I have to tell you.

Mr. THOMAS. Senator, I happen to think that we have still got a long way to go to deal with this issue and we have some real tough decisions to make. The combined sewer overflow issue is a very tough issue. You heard it, for instance, in the hearing when Mayor Koch came down and talked about the 106-mile site. He said, "Look, I have to deal with combined sewer overflows, and look how much that is going to cost me, and I have to make financial tradeoffs." We are saying, "No, we want you to do both. We want you to work on getting out of the 106-mile site; we want you to deal with combined sewer overflows; and we are also going to require storm water permitting for large cities. New York is going to be a big piece of it."

All of those things are going to be tough issues for them. We are also going forward under the solid waste authorities, which, again, you are very familiar with and you know it to be a very tough issue, like Freshkills. We are going to tighten down consistently on dealing with solid waste and solid waste disposal, which is a major issue, I think, as far as beach pollution is concerned in your area.

Senator LAUTENBERG. Does anybody have any idea of what the volume of sludge being dumped out there is now compared to what it was, let's say, 10 years ago or 16 years ago?

Mr. THOMAS. I don't know the figures.

Senator LAUTENBERG. Well, it is my understanding that the volumes approximate that which existed at the peak time. We have had Philadelphia and other major cities getting out of the ocean, as you very well know.

Mr. THOMAS. Exactly. I agree.

Senator LAUTENBERG. What kind of resources and personnel and funding have you budgeted for enforcing the Ocean Dumping Act this year, this coming year?

Mr. THOMAS. Rebecca, do you know the specific figures on it?

Ms. HANMER. We have not been budgeting specifically for ocean dumping enforcement. Our role in taking the enforcement cases begins after we get referrals from the Coast Guard. So the taking of the cases is reflected as part of our regular water quality enforcement budget.

COAST GUARD REFERRALS

Senator LAUTENBERG. Last year I fought very hard to get about $1 million for a new ocean dumping surveillance system for the Coast Guard into the transportation appropriation bill.

The Coast Guard says this will increase surveillance coverage of sludge dumping by—they use a figure of 50 to 100 times over the past rates, and that is a quantum leap in coverage.

Can you promise us that we will see a major step forward in EPA enforcement of our ocean dumping laws? Can we count on you to put more focus, to put more emphasis on the enforcement of the these laws, as much as we expect from the Coast Guard?

Mr. THOMAS. I don't have any reservation about saying that as the Coast Guard increases their referrals, we are fully prepared to work with them and prosecute those referrals, administratively and judicially, with the Justice Department. There is no question that we have that commitment.

We are also committed to increase our overall efforts in a variety of ways to deal with the near-coastal waters issue, both ocean pollution and pollution of the estuaries close to the shore.

Senator LAUTENBERG. My time is up. Thank you, Mr. Chairman.

Senator PROXMIRE. Thank you, Senator Lautenberg. I have to go to the floor in a couple of minutes. I am going to ask Senator Leahy to chair the committee in my absence.

Senator Grassley?

FISCAL IMPACT OF SAFE DRINKING WATER ACT REGULATIONS

Senator GRASSLEY. Thank you, Mr. Chairman, and thank you, Mr. Thomas, for the thorough opening statement that you had. We all are aware of the problems that you have of carrying out the policy we pass with, of course, limited funding at this particular time, and we know that limited funding is even more of a problem for the local communities and businesses that have to meet those regulations.

I would like to start with reference to the Safe Drinking Water Act of 1986 in which Congress expressed the concern of the American people about the protection of the water that everyone must consume. I understand that the Environmental Protection Agency is currently promulgating regulations which will set the maximum contaminant levels for 83 contaminants under the act.

While the goal of the act is worthy, I feel that we need to be concerned about the fiscal impact on our cities and local governments charged with the implementation of these new regulations.

Could you please tell me what the costs of implementing the new regulations will be, and does the fiscal year 1989 budget include any assistance for cities who need to meet the new standards set under the Safe Drinking Water Act?

Mr. THOMAS. Senator, we do have some estimates of the overall costs that would be incurred as a result of some of the requirements under the reauthorized Safe Drinking Water Act, but the more specific estimates would be on each individual contaminent limit that we are going forward with. We would be more than happy to provide that to you and to members of the committee for the record.

[The information follows:]

ESTIMATED COST TO PUBLIC WATER SUPPLIES

EPA has promulgated rules for fluoride and volatile organic chemicals. The estimated cost for all 300 water supplies that would have to install treatment to remove fluoride is $3 million annually. That cost includes both the annualization of capital and operation and maintenance costs. On a similar basis, the cost for the volatile organic regulation is $40 million annually for the approximately 1,700 water supplies that are expected to have to install treatment.

EPA has proposed both the filtration and coliform monitoring rules. EPA had estimated that annual cost for the filtration rule would be $311 million and an additional annual monitoring cost for the coliform rule would be $100 million. The costs for both of these rules is expected to be reduced in response to the comments that have been received.

EPA projects that annual costs for all the regulations is $1 to $2 billion. These costs are likely to change as the regulations are proposed and promulgated.

Mr. THOMAS. I would just say overall, there is no question that the requirements under the law as we are implementing it are going to have a financial impact on some communities, some more than others, but probably smaller communities may find a significant impact, given the sizes of their budgets and what would be required.

Because we are promulgating 83 additional standards, which means monitoring will be required, and if there is exceedance of those standards, treatment will be required.

Additionally, we established requirements for monitoring for nonregulated pollutants, which means additional monitoring is required as well as reporting on a periodic basis from communities, which is an additional expense.

Finally, as we look at some of the issues we will deal with over the next couple of years, we see some fairly sizable ones. I believe the lead standard will have a significant impact financially. I also think it will have a favorable impact on public health when we go forward with it. I think the disinfection byproduct standard will have significant impact, and I also think that filtration and coliform monitoring rules, which we currently have under review, will have significant economic impact on some communities.

We can give you both cost estimates specific to the rules we have already worked on and an overall estimate of the cost of the act. I don't have those with me right now.

Senator GRASSLEY. Is there any help in your 1989 budget?

Mr. THOMAS. No; not in the sense of a financial assistance program to help communities either with capital improvements or operating improvements. We do provide some small amount of money for training and technical assistance in public education, but not in the sense of the kind of financial assistance, I think, that communities would look for.

Senator GRASSLEY. OK. So this is, then, another example of Congress passing laws and the administration implementing regulations forcing the communities to spend additional money through federal requirements without any help from Washington. I didn't know whether there was any authorized in the legislation. I assumed that there was.

Mr. THOMAS. No; there was not. As a matter of fact, in most of our programs, there is not any authorized financial assistance for local communities to meet our regulatory requirements. With the exception of the construction grant program for sewage, we don't have any big grant programs authorized. You will find that now, and over the coming years, we have a number of both regulations and programs that will have a very substantial impact economically on local governments. Probably local government as a sector will feel more of the impact than any other sector of government over the next several years.

ALTERNATIVE TECHNOLOGIES

Senator GRASSLEY. I understand that cities should use the best available technology in order to meet the requirements set forth by this act. For those cities, however, which cannot withstand the cost of the program, has the EPA devised any alternative methods of bringing cities into compliance with the results still being the same?

Mr. THOMAS. Let me ask Ms. Hanmer to answer that.

Ms. HANMER. The ways in which a city has to deal with it differ greatly. As the Administrator said, we are evaluating this on a case-by-case basis with different types of regulations having their own demands. For example, in the case of the radioactive pollutants, aeration is one way to deal with the problem.

Mixing of waters with cleaner waters is another way to deal with the problem. The technical answers differ from pollutant to pollutant, and we deal with the best available technology when we promulgate a rule. Under the Safe Drinking Water Act, when we issue a rule we are required to evaluate the resource needs of communities to implement it. We try, during the promulgation period, to take into account unusual problems or anything we can solve. For very small communities, the law allows us to give extensions of time under very restricted circumstances.

Senator GRASSLEY. So that as long as results are achieved, each of the contaminant requirements and goals that must be met, there are alternatives by which the communities can achieve those as long as the results meet your requirements?

Ms. HANMER. Yes; within some limits.

WASTE WATER TREATMENT COMPLIANCE

Senator GRASSLEY. Mr. Thomas, I would like to go on, now, to waste water treatment regulations and the fact that in my state, there are about 200 communities that have not come into compliance. The total cost for these communities to come into compliance could be as much as $750 million. With the compliance deadlines approaching in 1989, how do you feel that these communities can reach the standards given the cutback in program funding?

Mr. THOMAS. Senator, that is an issue we faced over the last several years, as we anticipated the July 1, 1988, deadline for communities to achieve secondary treatment or better standards for wastewater treatment.

My predecessor, Bill Ruckelshaus developed, and I subsequently adopted, a national municipal policy, recognizing that there is not a connection in the Clean Water Act between the requirement for July 1988 compliance and funding.

Funding under the construction grants program will only provide a very small part of the overall money that is required for compliance in this country, and we have moved forward aggressively to seek compliance through the courts. We have achieved that in the majority of major cities in the country and most of them are using local funds and state funds to achieve compliance.

The federal funds do provide, obviously, some assistance, and I think they are important. But overall, the issue comes down to, with state communities as well as with others, where the money will be raised. Some of it will come from the federal funds, but the majority of it, I think, will come from local funding, and we have seen states and localities raise taxes and develop other funding mechanisms in order to come up with that money.

CLEAN AIR ACT AMENDMENTS

Senator GRASSLEY. Thank you.

The Senate Environment and Public Works Committee has prepared legislation—S. 1894, the Clean Air Act amendments of 1987—limiting airborne pollution and setting new penalties for those cities not in compliance with the original Clean Air Act.

I would imagine that you have had a chance to review the legislation in its preliminary form. Under the proposed budget for fiscal year 1989, would you be able to effectively implement the bill as it was passed out of committee or would additional funds be required?

Mr. THOMAS. I had an opportunity to testify on that bill before the committee and made a number of points about the bill at that time.

Clearly, if it was passed, it would present a financial and resource issue to my Agency and to counterpart agencies in the states that have to administer it. I think it would require additional resources without question, but the biggest financial issue in that bill is the people who would have to go forward and actually comply with the requirements.

It is a very expensive bill. We have major reservations about the bill and strongly oppose some components of it. It is a very comprehensive bill dealing with many issues. We support some components of it, but strongly oppose others.

There is no question, though, that within my budget and within state budgets that manage the Clean Air Act, resources would be required to fully implement it.

ASBESTOS SAMPLING TECHNOLOGY

Senator GRASSLEY. OK. I am sure that you are aware of the concern of schools about meeting the deadlines for the Asbestos Hazardous Emergency Response Act, and I know that Senator Garn has visited about this.

I also want to point out to you that many Iowa schools have contacted me recently, not only about the inability to meet the deadline, but about sampling technology used. So my question relates to the technology used.

The question which has been raised is why transition electron microscopy or TEM, as you know, is needed over phased contrast microscopy or PCM. If the results are similar and both reduce the degree of human risk, why has the government opted for the more expensive TEM sampling approach?

Mr. THOMAS. Let me ask Dr. Moore, who manages our toxic substances program, to respond.

Mr. MOORE. Senator, as I think you know, phased contrast microscopy has been the method that has been used for many, many years. It is only in recent years that transmission electron microscopy [TEM] has started to enter into the sampling technique field. The preference for going to TEM over the phased contrast is that indeed, it is much more accurate, both in the correct identification of asbestos fibers, as well as aiding one's ability to quantify the presence of fibers when they are detected. Phased contrast has technical limitations regarding the level of magnification. Second, transmission electron microscopy allows us to be much more accurate, when seeing a fiber, in identifying it as an asbestos fiber rather than a different type of fiber.

Senator GRASSLEY. Are you saying, then, that the results are not the same and that the human risk factor is greater if the other method is used? It is my understanding that they are about the same, and since there is a great deal of difference in cost, why not still allow the alternative? I think you are saying to me that my understanding of it is not correct.

Mr. MOORE. Sir, the phased microscopy, I think, has served us all very well for many, many years. But TEM is more sophisticated equipment and provides an opportunity to move to something else that might serve us even better than something that has served us well in the past.

The lag in moving from one methodology to the other is to make sure that there is adequate capability and adequate resources to be able to do the TEM that is required. But there is no question that TEM is more precise than phased microscopy.

Senator GRASSLEY. So from that standpoint, you consider it, then, cost effective, as well?

Mr. MOORE. Yes.

Senator GRASSLEY. Mr. Chairman, I am done, but I did have one more question.

Senator LEAHY. Go ahead.

Senator GRASSLEY. No; I will ask for that to be submitted in writing. I will submit this to you and then ask for a response.

Mr. THOMAS. We will be pleased to respond.

Senator GRASSLEY. Thank you.

CAMEL'S HUMP

Senator LEAHY. Thank you, Mr. Thomas. It is good to see you here and those with you. Every time I see you here, I remember back to when you and I climbed Camel's Hump in Vermont. We have shared a number of experiences here, but certainly, climbing Camel's Hump was kind of a special one. I think you were there because you had a concern about what is happening to our forests, as do I.

Now, our views tend to differ on what we should do about the damage to our forests. I think that we have enough information so that we could act today. You feel that we need to know more. Yet in a way, we share a common experience there, you, as an administrator, and I as a Senator, but neither one of us have enough time to concentrate on one matter. I go from judges to wheat prices to nuclear disarmament and on. You have to move from one pollution issue to the next, from pesticides to hazardous waste to ozone control to cleaning up the bay.

So I wanted to tell you about one Vermonter, a man named Robert Mello. He shared our joy in climbing Camel's Hump. In fact, he went up there with us, and then he began studying the destruction he saw on Camel's Hump, but he has a luxury that neither you nor I have.

Even though some might like it, you and I did not have the luxury of taking a leave of absence, but he did. He took a leave of absence from his law firm, and he wrote this book, "The Last Stand of the Red Spruce," after he climbed Camel's Hump with the two of us and took that leave of absence.

Let me read a couple of paragraphs from it, because he started without any preconception at all. He said:

> I am a trial lawyer. In July 1984, I was a partner in Vermont's largest law firm, when I began a one-year sabbatical. This was my chance to find out why these magnificent trees were dying on my favorite mountain. I had no fixed views as to whether or not the acid rain theory was valid or whether natural phenomena were the cause.
>
> My research was carried out independently of any interest groups, nor did I seek any funding or help from the many environmental groups or industrial associations concerned with the problem of acid rain.

And then he concluded:

> I believe that the circumstantial evidence implicating air pollution is sufficiently impressive, that legislative action should be taken immediately to reduce emissions substantially in the hope of protecting our forests from the risk of greater damage.

Mr. Thomas, you have at least 8 months left as EPA Administrator. Let me ask you to take one more look at the acid rain issue and ask you to review the findings in Mr. Mello's assessment, and after we finish the day, I would like to give you a copy of that book. I hope it will convince you, and it has convinced me, that legislative action is essential to control acid rain.

Can I ask you to take one more look in the time left?

EFFECTS OF ACID RAIN ON FORESTS

Mr. THOMAS. There is no question I will do that, Senator. The issue, as you know, is one that I have spent a lot of time on, both as the person who chairs the federal agency that oversees acid rain research as well as the primary, policy person within the administration who has dealt with the policy of acid rain and what we should do.

I must tell you that as far as forests are concerned, I haven't reached the same conclusion based on the reviews I have done with scientists over the last number of years that have been reached by the book. I have absolutely no problem with reviewing it and would welcome an opportunity to review the book and will do so with my scientists.

The complexity of the forest issue, I think, is now coming clearer and clearer to people who are studying the issue of acid rain, and to this point, I don't think that we have found, from what I have seen, a scientific connection between forest decline and acid deposition as such, but we are becoming more and more suspect of ozone, and ozone plays a role, both in and of itself as well as in the context of acid deposition.

The issue becomes more complex when you recognize that ozone is a pollutant formed by two other pollutants, nitrogen oxide and volatile organics. It becomes more complex when you realize that it is depleted again by nitrogen oxide, one of those pollutants that created it.

I recently have worked with our scientists, and they have developed long-range transport models in ozone and have looked at the impact of reducing nitrogen oxide. One of the things we have looked at as a part of our acid rain strategy and looked at what would that mean just in terms of ozone if ozone is, maybe, a more important pollutant for forest and crop damage than acid deposition itself is, and I found that in many places, the reduction of nitrogen oxide would actually increase the levels of ozone and, in fact, we may exacerbate our problem.

So the dilemma that is painted is not: Do we reduce pollution? The dilemma is: How much more do we reduce pollution beyond what we are already doing and which pollutants do we reduce?

We are working, as you know, and have worked for a number of years, to reduce sulphur oxide, a major precursor of acid deposition. We have made good progress in this country and we are debating on how much more we need to do. I think we need to continue that reduction trend which has resulted in over a 30-percent reduction in the last 10 years. We have made some progress on nitrogen oxide, but it is going to be a tough one. Deciding how much it needs to be reduced and what impact the reduction will have on ozone is one of the most difficult scientific problems that I have been involved with as I have worked in the Agency.

Working through that issue is extremely important for us. It needs to be a major commitment on the part of federal and private agencies as far as research is concerned. The issue is one that is not easily solved, but it is at the heart, I believe, of where our ultimate answer is going to be as far as forests are concerned.

Frankly, I think the issue on acid rain is going to be more concrete in the near term as it relates to aquatic resources.

Senator LEAHY. As it relates to?

EFFECTS OF ACID RAIN ON AQUATIC RESOURCES

Mr. THOMAS. Aquatic resources; rivers and streams. I think we are far more advanced, frankly, in knowing exactly what the impact is; that is, getting to a point where we are going to be able to make projections on impacts of acid deposition on the lakes and streams than we are on its impact on forests.

Senator LEAHY. I am glad to hear of the latter part, because as you know, especially in the Northeast, we have an awful lot of lakes and streams that have been badly damaged, some think even irrefuteably damaged by this.

You are a scientist, and I am not, but I will tell you my concern is a very, very real one. I look at this mountain, Camel's Hump, and many others. I grew up there. One of my first memories as a child of less than 5 years old was climbing up for picnics on the side of that with my family. I can see it from the front porch of my home in Vermont. Seeing it change dramatically for the worse over the last 20 or 30 years, I am giving you kind of a cry from the heart as one who looks at this; sees damage being caused, and is just crying out.

Can't we, as a powerful, wealthy, industrious, imaginative, innovative country, and a government that should be the same, find what is causing that and find the steps and take the steps to do it, and then also, show the political world, which is sometimes lacking in doing it? Because I suspect in trying to stop this damage or stop the damage of the ozone or stop the damage to our lakes and streams, that many times, the political decisions that are going to have to be made are going to be very, very difficult. But that, in itself, requires a lot of us to set aside some very parochial interests to do that.

Mr. THOMAS. Frankly, Senator, having gone with you to Camel's Hump and having grown up, myself, in a rural area of South Carolina, I can identify very directly with your feelings about Camel's Hump from my own days of growing up in a rural area.

It has been one of the more difficult issues that I have dealt with as far as fighting my emotional response and trying to concentrate on an analytic response. I must say that I believe we can and will have the will to deal with this issue. I think we clearly will have the political will and the analytical will to come to grips with it finally. The difficulty we have today is one of timing, not one of objective.

Senator LEAHY. Thank you.

REREGISTRATION FEES

On another area, pesticides, as you know, Senator Lugar and I have made FIFRA reform a top priority over in the Senate Agriculture Committee. If we go the way we are going now, it will take us 37 years to finish testing key chemicals. None of us find that acceptable. You don't, I don't, and I can't imagine anybody else who does, but we also can't continue to threaten to bankrupt EPA's budget if you decide to cancel a chemical.

So we agreed in the committee that we will have to raise $150 million to have complete reregistration in 9 years, not 37 years.

Do you share my conviction that establishing reregistration fees is essential?

Mr. THOMAS. Very much so, Senator. I strongly endorse the direction that you are taking in your committee, both to speed up reregistration and to raise the fees from the registrants to fund the speedup of the process. Also, as you know, I believe very strongly that we must deal with the other side of the equation. Once we make a decision on reregistration, which sometimes results in cancellation and suspension, I think we need to move the responsibility for financing the indemnification and disposal out of our budget and back to the registrants themselves. This is the other part of the equation I am dealing with. As you see reflected in my budget, I have had to budget $60 million to deal with disposal of pesticides, bad pesticides, as opposed to having the registrants take on that responsibility.

Senator LEAHY. In fact, the present law sort of penalizes you if you do your job. If you go out and find something that needs to be taken off the market, needs to be taken away, you have got to indemnify the holders, and you have got to pay all the storage and disposal costs. If you really do your job, you are going to be out of money before the year is over; at least the potential is there.

Mr. THOMAS. There is no question about it. It is not a part of our equation when we make decisions to suspend a pesticide, but I must tell you, when we make a decision, we are immediately faced with a fiscal crisis. We go forward with suspending and canceling a pesticide because of immediate health concerns based on test results that have come in. Then we have to immediately turn around and start seeking funding for the storage and ultimate disposal of those pesticides.

My preference is, once we make a determination that a pesticide is a bad pesticide and should be taken off the market, it would be the responsibility of the registrant or the manufacturer of that pesticide to recall that pesticide and dispose of it. That would be consistent with the approach we take in our other environmental statutes, for recalling automobiles with defective pollution control equipment.

Let's put the burden where the burden ought to lie as far as dealing with those bad pesticides.

Senator LEAHY. Then you would say a reform of indemnification, storage, disposal is essential?

Mr. THOMAS. Essential.

Senator LEAHY. Would you say it is essential that we try to get this bill through this year?

Mr. THOMAS. Absolutely. I think that reauthorization of FIFRA is extremely difficult, as you know better than I. You have been at it longer than I. FIFRA reauthorization is essential, I think, for really moving the pesticide program forward the way we both want to move it.

Senator LEAHY. I want to commend you and your Department for your cooperation in helping that. Dr. Moore has been over there so much that I understand now his mail is forwarded over to the Senate Agriculture Committee, but I appreciate you being over there, and every single time we have asked for somebody to come over, they have been there, and I appreciate that. I do want to get this through this year. I don't want to end up bankrupting EPA just because they are doing their job.

Senator Nickles, what we have been trying to do is taking people as they have come in. I know Senator Mikulski has another committee meeting that she has to be at so if you have no objection we will go to her and then to you.

FAYETTEVILLE DISCHARGE PERMIT

Senator NICKLES. I am supposed to be somewhere, too. I only have about 5 minutes, but go ahead.

Senator MIKULSKI. If you only have 5 minutes, Senator, go ahead.

Senator NICKLES. Thank you very much. Mr. Chairman, thank you, and Mr. Thomas, welcome again before this committee. I will try to keep my points very brief, because I do have another commitment, as well.

Mr. Thomas, let me begin by expressing my displeasure over the fact that my office and other members of the Oklahoma delegation, to my knowledge, have not received a response yet pursuant to a matter of dealing with the Illinois River in our state and the discharge permit for the sewage treatment plant in Fayetteville.

We have contacted you and requested that you would use your power and your authority to modify or delay or suspend the discharge treatment permit for the city of Fayetteville. This is a very serious matter, as I know, but we have brought to your attention, it is a very serious matter to us, to our entire state, to Oklahoma, to Governor Bellman, to the attorney general, to the people of Oklahoma. This is not an insignificant matter when you are talking about a toxic discharge, waste material going into one of the scenic rivers, actually, in our state, the prettiest, most active tourist attraction that we have as far as the scenic river is concerned. That one river, the Illinois River, has more tourism, more floats, more rafting, more canoeing, than any other river by far in our state.

We are very, very concerned about it. We have been wrestling with this issue for ages, now, and it is a bother and a concern that we would see EPA giving a permit for a city to allow a discharge of effluence into that river. We have contacted you; we think that you have the authority to modify or suspend that permit. Can you bring me up to date on that?

FAYETTEVILLE PERMIT REVIEW

Mr. THOMAS. Senator, I recognize your concern. You and I have discussed it in the past. It is a very difficult issue, and I know that the entire Oklahoma delegation has been most concerned about it for a long time.

We are in the midst now of a legal proceeding as a result, and as the appeal official in that decision I can't discuss the substance of the issue with you. I regret that we haven't given you a clear indication of the timeframe as far as the legal process is concerned. We are reviewing an administrative law judge's decision related to that permit, and I am called upon to make a decision on it during the next several weeks. I will ensure that you and the other members of the delegation have a clear understanding of exactly what the timeframe is that we are working toward on that decision, and clearly know exactly what the decision is and why it was made.

I anticipate that we will go through additional steps on the administrative side, and then it would not surprise me if we went through additional steps on the judicial side. There are very strong feelings on all sides of this issue. It is a very sensitive issue and a very difficult one to resolve. I am giving it careful consideration and will look very closely at exactly what the facts are when the staff brings forward the matter to me for a final decision.

Senator NICKLES. Just make sure that you are aware of a couple of facts and maybe a new thing that is happening. Are you aware the state of Oklahoma has designated the Illinois River as a state scenic river?

Mr. THOMAS. Senator, as I said, I really can't get into the detail of the issue with you. I am prohibited from doing that, given the restraints within which I have to deal with this issue.

Senator NICKLES. OK. Also, for your information, the Illinois River, since we have designated it as a state scenic river, it is protected by Oklahoma's water quality standards against any increased lead or any discharges of effluent.

I have heard some of the people state, "Well, the effluent is not a problem; it is going to be well treated, et cetera." If that is the case, they are receiving, right now, 100 percent of that effluent stays in the White River, on the Arkansas side. If they are treating it so well, they could keep it on the Arkansas side and not put into the most scenic river, the most scenic river that we have in the state of Oklahoma.

I can't tell you how strongly I feel about this and the other members, as well. The number of meetings. We have been wrestling with this thing for years, and it is also a concern, too, when people see the EPA, which we think is charged with trying to keep our natural resources cleaned or improved, funding and financing and allowing a permit that would do just the opposite in our State. That bothers this Senator a great deal.

Mr. THOMAS. Clearly, the heart of the issue is whether the permit discharger is complying with the law, the Federal Clean Water Act, and whether we have effectively discharged our responsibility for permit issuance and permit overview under that law.

It is difficult for us, at times, to deal with all sides of people's perceptions of problems. I can tell you, though, that on this issue, we are very sensitive to your concerns. We are trying to deal with these concerns and at the same time, trying to ensure that a permittee is complying fully with the law as the law was written.

Senator NICKLES. Mr. Thomas, thank you very much. Senator Mikulski, thank you very much, too, for your accommodation.

Senator PROXMIRE. Senator Mikulski?

Senator MIKULSKI. Thank you, Mr. Chairman, and Mr. Thomas, again, we want to welcome you before this committee. Everyone talks about how this is your last appearance. One doesn't know how the Presidential election is going to turn out, but I want to commend you in our working relationship both in the House and the Senate for, No. 1, your efforts in protecting our environment. But also, in protecting the integrity of the Environmental Protection Agency.

I think you have restored a confidence in its ethical behavior, which was very much appreciated; the integrity of the personnel that you have, and then the scientific and management approaches that you brought to the Agency. I think that, in addition to the specific environmental improvements that you have worked to achieve, I think Lee Thomas is going to be remembered that he not only protected the environment, but he gave us a sense of confidence about EPA, and we are very grateful for that.

Mr. THOMAS. Thank you, Senator.

CONSTRUCTION GRANT FUNDING

Senator MIKULSKI. We are also appreciative of the work that you have done in the Chesapeake Bay, and we note in this year's budget that there is even going to be a modest improvement in that.

I have, really, two areas of questioning, one on the construction grant money for sewage treatment, and then also some concerns we have about the disposal of mustard gas and the role of EPA.

On the role of the construction grants, you and the President have been very generous to Virginia, Maryland, and the District of Columbia, but one of our chief tools has been construction grants for sewage treatment, particularly in areas like the Potomac, the Patuxent, and the Patapsco Rivers.

My question is: Why did you recommend cutting construction grants? Do you think construction grants, that is, sewage treatment, is needed, and where and how should they be funded?

Mr. THOMAS. Senator, you are absolutely right about the difficulty of that particular issue. On the one hand, clearly, we want clean water, and we want communities to upgrade their treatment to at least secondary standard, and as you indicated in other cases, maybe advanced treatment as it related to the Chesapeake goals.

On the other hand, I think Congress and the reauthorization of the Clean Water Act and the administration look at how much the federal government can afford to assist local communities in doing that. We have both tried to come to grips with that. Congress said, "What we need to do is phase out this grant program, but let's try and set up a program for the long term so that there will be funding." The revolving loan program was the resulting idea that was incorporated in the Clean Water Act.

We strongly support the revolving loan program as a concept for the long term. Where we disagree is how much we can afford as we move to the revolving loan program. Congress wants $18 billion; we have suggested $12 billion. Frankly, I was up here several years ago saying we suggested $6 billion, so I feel like we have made a lot of movement.

The overall amount of money that the communities need, the communities around the Chesapeake Bay, is going to be far more than the federal money, whether it is the $12 million or whether it is the $18 million program. Cleaning up the bay is going to require far more than that. Many of the states, including those around the bay, are moving to provide that funding. I saw Pennsylvania enact a major infrastructure funding bill through legislation last year. As you know, Maryland has provided substantial infrastructure funding; Virginia has provided substantial infrastructure funding. All of these states are looking at their state and local governments to provide the majority of funds that are required.

I think what it comes down to is not a backing away from commitment to clean water, but a debate on how much can we afford, as a federal government to assist local communities in this one area? We feel that the federal government can't afford the full $18 billion.

Senator MIKULSKI. Well, I note that the construction grant program is 33 percent less than that which is authorized.

Mr. THOMAS. The authorized level is $2.4 billion. We have requested $1.5 billion. We had anticipated requesting $1.9 billion. However, on our $12 billion overall amount, we subtracted the amount of additional funding that Congress appropriated last year and the year before from the $1.9 billion figure we had proposed and came up with $1.5 billion.

Senator MIKULSKI. I think the Congress, when it overrode the President's Clean Water Act veto, expressed strong support for the construction grants program, and I think this is going to be an ongoing issue for discussion with the subcommittee.

Mr. THOMAS. There is no question about it.

ABERDEEN MUSTARD GAS DISPOSAL

Senator MIKULSKI. In the interest of time, let me move to the issue of mustard gas. As you know, the Army is preparing to dispose of, or move mustard gas to several state sites, one of which is in Aberdeen, Md. As I note the process, EPA has not been involved enough with the Army in commenting on the most effective, safe and reliable ways for disposing mustard gas.

One question is: To what extent have you been involved with the Army; and then second, in local communities, I would imagine the Army has to go through RCRA and some of the permitting process, which then brings EPA into it. My question is: What role has EPA played in the mustard gas issue with the military and what role do you see it playing and how can local governments turn to you for advice, technical assistance, and so on?

Mr. THOMAS. Senator, let me let Dr. Porter respond, but let me say that overall, EPA has been involved. Army contacted me about 2 years ago, about the issue. I remember attending an initial briefing at the Pentagon with Army officials and with my key assistant administrators to talk about both the mandate they had been given by the Congress to destroy the old chemical stockpiles and how they wanted to have an interactive process with EPA. Let me let Dr. Porter talk to you about how things have progressed over that period of time.

Mr. PORTER. Thank you. Senator, we have been very active in that, and I think where we are now is that the Army, as I am sure you know, has chosen eight sites for getting rid of those agents, including Aberdeen and seven others.

The Army went through a process of looking first at whether they wanted to have one regional incinerator or a number of others, but they have chosen that general approach. My staff has been very involved in the RCRA permitting issue with them. What we are doing and what we will be doing, I think, for several years, is working with them and with the affected communities on whether they should or should not get a RCRA permit for that incinerator at Aberdeen and the other locations.

In addition, as I think you know, the state of Maryland has requested that the Army do an environmental impact statement for that potential incinerator at Aberdeen. In fact, I believe the state has said they don't want to move on processing the RCRA permit until the Army has completed an EIS, and of course, EPA will get involved with that also.

So we have been fairly active in that as well as other problems that Aberdeen has in RCRA areas.

Senator MIKULSKI. Have you been providing technical assistance to the Army in the mustard gas issue?

Aberdeen Proving Ground is not an Environmental Protection Agency. They don't have the experience that you do on the technology of incineration; or the management of community concern; the management of the hazardous waste itself, all of which is regulated through Superfund and RCRA. You have a lot of experience on the waste, on people management, transportation, technology. Are you providing this to them?

Mr. PORTER. We are, Senator, in a couple of ways. First, at Aberdeen, per se, there are 11 areas that are being studied now under RCRA corrective action. There are over 100 solid waste management units at Aberdeen. We are very involved with them and with the community. There will be a series of public hearings and a series of studies over a year or two to decide how to clean up those areas.

In addition, there are two Superfund sites at Aberdeen. We are involved in those two Superfund sites. Finally, we will eventually be involved in an overall interagency agreement with respect to Superfund for that whole site. So we are fairly involved, and we are certainly trying to counsel them in the sense of the public interaction, but there will be all of that any way.

What we are trying to do at Aberdeen, I might say more generally, and we try to do it at other federal facilities, is to pick which law was furthest along. In other words, the state had issued a RCRA permit to Aberdeen for an incinerator. That brought the whole RCRA corrective action process to bear on Aberdeen, and that is where these 100 or 110 sites are being looked at now. We are very involved with Aberdeen.

Senator MIKULSKI. Are you saying in regarding mustard gas that the Army has to follow RCRA?

Mr. PORTER. Yes; they will need a RCRA permit.

Senator MIKULSKI. At every site?

Mr. PORTER. At every one of those eight sites; yes.

INCINERATOR TECHNOLOGY

Senator MIKULSKI. My last question, and I would like to talk with you about the issue, and we thank you, but the Army, as you know, has developed some technology it is experimenting with in Utah. My question is: Is there commercially available incinerator technology, kind of on-the-shelf technology that has already been tried, already been in the marketplace?

Mr. PORTER. Senator, I think most of the elements of the technology do exist. One thing the Army is going to do, out at Johnson Atol in the Pacific, is a full-scale demonstration of the technology. It looks like the timing is such that they will be finished with that demonstration of the precise technology before the permits are issued at these eight sites. I think I would characterize it this way: They have extrapolated somewhat, but all of the pieces of the technology are in place. I don't think it is a big leap in technology, but I am happy to see this demonstration at Johnson Atol going first.

Senator MIKULSKI. Have you been following the Utah incinerator?

Mr. PORTER. Yes; we have.

Senator MIKULSKI. And the problems they have there?

Mr. PORTER. Yes; we have, and I think that is more troubling, but I think they can work through these issues. I think what we are going to have here is a long period of time, and I may also say, and I am sure you are aware of this, the Army is saying they don't expect to meet the 1994 deadline with respect to these munitions. I think there is going to be sufficient time here to get these permits done. At first there was a big rush to get these permits done. It was still deliberate, but I think we are going to have more time to consider these more carefully.

Senator MIKULSKI. Thank you for those answers, and again, Mr. Thomas, thank you.

MINORITY EMPLOYMENT

Senator PROXMIRE. I have two quick questions, one on women and minorities and another on drinking water. On women and minorities, I would like to discuss the Agency's record of providing employment opportunities for women and minorities.

Last year you reported that as of September 30, 1986, 52 percent of your total work force were women and minorities, but only 9 percent of jobs at the GS–13 and above level were held by women and minorities. That is quite a low percentage, Mr. Thomas. Please tell us what specific efforts are planned for fiscal 1989 to improve your record of promoting blacks and minorities.

Mr. THOMAS. Senator, we have had a strong effort in the Agency since I have been Administrator, I know, to deal with affirmative action for women and minorities.

We have developed, each year, a program for each of our program offices and each of our regional offices. We feel we are making good progress.

The percentage, for instance, of women and minorities in the SES, our most senior management core, is now 14 percent; the percentage of women and minorities in the GS/GM–13 to GS/GM–15 levels, which are the levels right below our senior managers, is 28 percent.

Senator PROXMIRE. Can you break that down for both women and minorities separately?

Mr. THOMAS. I don't have it in front of me, but clearly we can do that. There is no problem with doing that. We have that information.

Overall, your figure of 52 percent is still accurate as far as the overall Agency work force is concerned.

Senator PROXMIRE. Well, it just seems to me that that is still a shockingly low percent. You said 14 percent?

Mr. THOMAS. Fourteen percent of our SES managers.

Senator PROXMIRE. Can you give us some notion of how that breaks down between women on the one hand and minorities?

Mr. THOMAS. To give you an example, the SES candidate program this year, I think, is about 35 percent women. We have set goals to try to move forward and bring up that percentage for women and minorities. We break down those goals by minority categories and by each program office.

We have had made good progress over the last few years.

Senator PROXMIRE. You said it has gone to 14 percent?

Mr. THOMAS. Yes, sir; as far as our senior management.

Senator PROXMIRE. That is some progress.

Mr. THOMAS. Twenty-eight percent as far as our GS-13 to GS-15 categories.

Senator PROXMIRE. Give me the breakdown, because there is no reason why we should put women and minorities in the same category. We ought to have a separate consideration and comparison for both.

Mr. THOMAS. And we do, Senator; I just don't have the figures right in front of me.

Senator PROXMIRE. Would you provide, for the record, a 5-year analysis of the percentage of women and minorities in the work force at EPA separating women and minorities?

Mr. THOMAS. I would be pleased to.

Senator PROXMIRE. And also at the GS-13 and above.

Mr. THOMAS. We would be pleased to.

Senator PROXMIRE. During the 5-year period?

Mr. THOMAS. Yes.

[The information follows:]

WOMEN AND MINORITIES IN SES AND GS-13 TO GS-15

[In percent]

	Fiscal year—				
	1983	1984	1985	1986	1987
Women and minorities:					
Minorities' work force	19.3	20.1	21.2	22.2	22.9
Women's work force	41.1	42.5	44.0	45.1	46.2
GS/GM 13-15:					
Minorities' work force	7.8	8.0	8.3	8.3	8.7
Women's work force	15.0	16.6	18.5	20.2	22.5
SES and grade 16-18:					
Minorities work force	3.4	4.0	3.8	3.9	4.6
Women's work force	8.2	8.4	9.2	10.0	11.0

NADER REPORT

Senator PROXMIRE. The other question is with respect to water. You are requesting $103 million for a drinking water program, a decrease of $4.1 million from the current budget reflecting the completion of special studies mandated by Congress and underground injection permitting activities for class II wells.

Now, an article appearing in the New York Times on January 6 of this year revealed that a study conducted by the Center for Responsive Law—that is a group affiliated with Ralph Nader, as you know—found that one out of five public water systems tested in the United States was contaminated by chemicals.

The study asserted that EPA had been derelict in its duty of setting water standards and monitoring requirements as well as prescribing treatment methods. The study indicated that treatment with activated carbon filters could remove at least 87 percent of the organic chemicals in water at a cost of only 21 cents per 1,000 gallons.

I guess this is a question for Ms. Hanmer.

Ms. Hanmer, does the Agency agree with the group's findings, and if so, what are you doing to do to improve the situation?

Mr. THOMAS. I would say that overall we disagree with the group's findings. We would be glad to provide you with the detailed response we developed at the time those findings were published.

[The information follows:]

EPA RESPONSE TO NADER REPORT

The Center for Study of Responsive Law (CSRL) report, "Troubled Waters on Tap (January 1988)," claims that EPA is derelict in its duty in regulating organic chemicals in drinking water in the following areas:

1. requiring adequate treatment to remove organic chemical contamination;
2. updating monitoring requirements and conducting monitoring surveys to cover a greater range of unregulated contaminants;
3. setting standards for contaminants found in drinking water; and
4. reducing violations of drinking water standards, monitoring and reporting requirements

EPA is not in agreement with many of the conclusions/recommendations reached by CSRL and EPA's response is provided below.

EPA's Standard-Setting Program

EPA is in the midst of a comprehensive regulatory development program for contaminants in drinking water.

- EPA has already set 34 Primary and 13 Secondary Regulations; the Primary Regulations specify standards for 18 organic compounds which include the synthetic organics most frequently found in drinking water. By June 1989, EPA is scheduled to have produced regulations for a broad array of drinking water contaminants:
  - Drinking water standards will have been set for a total of 87 contaminants (includes 4 THMs), including 52 organic chemicals.
  - Monitoring requirements for unregulated contaminants will be set for about 150 organic compounds.
- EPA has just issued the Drinking Water Priority List (DWPL), which is EPA's list of potentially significant drinking water contaminants that may require regulation in the future. The DWPL is based upon an assessment of potential occurrence and possible adverse health effects of contaminants in drinking water. The DWPL was based upon all possible sources of information, such as EPA and State survey data, registered pesticides, research reports, and reports of contaminants in Superfund sites.
  - The Drinking Water Priority List includes 52 contaminants, 49 of which are organic compounds.
  - The majority of organic compounds on the Drinking Water Priority List are pesticides and disinfection by-products.
  - Drinking water standards will be set for at least 25 of the contaminants by January 1991.
  - A new Drinking Water Priority List will be issued in January 1991, from which at least 25 more standards will be set within three years. This process will be repeated every three years.

- In setting standards, one aspect is the identification of the best available technology (BAT) as the basis of the standards and for use in issuance of variances. Granular activated carbon has been identified as BAT for organic chemicals. In addition aeration has been identified for the volatile organics. These are not treatment requirements but have essentially the same impact if a water system has a problem.
  - If a water system detects a contaminant above the standard, the water system must come into compliance by application of BAT or use some other means.
  - If a water system applies for a variance, they must have installed BAT to be eligible.
- Monitoring surveys conducted by EPA continue to be an integral part of the standard-setting program.
  - Seven major surveys have been conducted by EPA since the mid-1970s looking for a broad array of contaminants in drinking water.
  - We have just recently completed the National Inorganics and Radionuclides Survey (NIRS) (1985-1987) which sampled 1,200 water supplies for some 50 compounds.
  - The National Pesticides Survey is in the initial startup phase and will sample some 1,500 drinking water wells across the country for 120 pesticides.
  - Other survey activities on a lesser scale are also conducted, such as a survey of several water systems for disinfection by-products, completed last year.
- Of course, research is an essential element in the regulatory program. Most compounds being detected in drinking water are not well known, and research is conducted on potential health effects, available treatment technologies for control, and analytical methods for measurement.

EPA is not regulating every compound that has ever been found in drinking water. Under the SDWA, EPA is setting standards for compounds that have been detected in drinking water that may pose an adverse health risk due to the concentration level and the frequency of detection. EPA does not agree with the implicit recommendations of CSRL that just because a compound can be detected in a drinking water supply, national drinking water standards should be set.

Thus far, EPA has identified 135 contaminants in drinking water that may warrant regulation under the SDWA (i.e., 83 plus 52 on the Drinking Water Priority List). In addition, monitoring requirements for unregulated contaminants have been (or soon will be) set for an additional 125 compounds.

- CSRL claims that 2110 contaminants have been detected in drinking water. Most of these were unconfirmed detections in research studies at trace levels (ppt to ppb).
- CSRL claims that 190 compounds of the 2110 compounds pose adverse health effects.
  - Correcting for duplicates, this list actually includes 168 compounds.
  - EPA is addressing 89 of the 168 in its regulatory actions.

- CSRL claims that 122 compounds of the 2110 have been detected by State surveys.
  - Correcting for duplicates, this list is actually 103 in length.
  - EPA is addressing 65 of the 103 in its regulatory actions.
- Of the 103 detected in State surveys, 45 are also on the CSRL list of toxics (i.e., the 168).
  - EPA is addressing 43 of the 45 in its regulatory actions.
  - Of the 45, 36 have been detected in two or more States. EPA is addressing 35 of the 36.

And what about the other unidentified organics in drinking water? CSPL has stated that 90% of organic matter in drinking water has not been identified. These compounds are natural organics such as lignins and tannins and probably pose no health risk to consumers.

It is interesting to note that Congress, which was clearly telling EPA to set more standards in the 1986 SDWA amendments, assessed the problem of contaminants in drinking water and required EPA to set standards for 83 specific contaminants and then set standards for 25 more every three years; the scope of the Congressional mandate is considerably less than that suggested in the CSRL report. By 1989, we will have set 87 standards that cover most of the significant drinking water contaminants and then we will set 25 more every three years.

EPA has prioritized drinking water contaminants in its standard-setting program and the history and current approach are summarized in Attachment A.

In terms of enforcement of standards, with authority for administrative orders (AO) provided in the 1986 SDWA, EPA is moving aggressively to reduce violations. States are now identifying significant non-compliers and if timely and appropriate action is not taken, EPA will issue an AO. In 1987, 123 AOs were proposed to be issued which resulted in many water systems taking the necessary actions to achieve compliance. Many systems are now making needed adjustments to come into compliance because of increased enforcement activity by states and the threat of EPA AOs.

EPA's Response to CSRL Recommendations

In regard to CSRL recommendations, EPA's response is as follows:

1. CSRL recommends that EPA should implement mandatory monitoring for a wider range of chemicals than required by the 1986 SDWA.

   EPA met the requirements of the 1986 SDWA amendments in promulgation in June 1987 of monitoring for 51 unregulated VOCs. We are going beyond that requirement in setting monitoring requirements for an additional 100 compounds. In addition, we continue to conduct national water quality surveys such as the NIRS and NPS.

2. CSPL recommends that EPA require water systems to install BAT if contaminants are detected at levels that may pose health risks.

   EPA certainly agrees that systems should reduce levels of contamination to safe levels by application of technology or other means. Under the SDWA, EPA rules identify BAT but systems are allowed to use BAT or other effective techniques provided that levels of contamination are reduced to safe levels.

3. CSPL recommends that future epidemiological studies should address a wide array of potential toxic effects, not just cancer risks.

   Cancer is ususally the issue of theoretical concern for the very low levels of substances found in drinking water. A number of studies have been carried out on cardiovascular issues and other effects. However, at the very low levels that contaminants are normally found in drinking water, health effects are not measurable and usually remain as theoretical concerns. Thus, a standard based upon controlling a cancer risk will ususally be the lowest number and protective against any other potential effect.

Summary

In conclusion, EPA is actively setting standards for significant drinking water contaminants. On going monitoring programs are evaluating other possible contaminants and technologies are being identified for their control. Enforcement programs have been accelerated in recent years and with additional standards and the use of AOs and other authorities, EPA expects a renewed confidence in the safety of the nation's drinking water.

NADER REPORT: FACTUAL ERRORS

In general, the report makes very few errors in facts, (except for double counting in the lists of chemicals prepared) but many statements are misleading. Factual errors include:

- The report claims that 190 contaminants have been shown to pose adverse health risks. The actual number is 168 after correcting for duplicates.

- The report claims that 122 contaminants have been detected in State surveys. The actual number is 103 after correcting for duplicates.

- Page 2, 4th ¶; page 3, bottom ¶: GWSS is referred to as the last national survey of unregulated contaminants. In fact, the National Inorganics and Radionuclides Survey of 1,200 systems was our last survey. The NIRS was conducted between 1985-1987 and the report is in final preparation.

  Also, we conducted a survey of ten water systems for disinfection by-products during 1986-1987. Although the survey was of lesser scope than a national survey, it demonstrates our continuing interest in assessing contaminants in drinking water.

- Page 22, 3rd ¶: The statement is a bit garbled that EPA considers occurrence data more important than concentration levels. In fact, we feel that frequency of detecting a contaminant in drinking water is more important than what levels are detected. By basing decisions on frequency, we have a broader list of possible contaminants for regulation than if we based our decisions on concentration (in addition to frequency). This is not a big point in the report.

- Page 24, Table 4: Secondary Drinking Water Regulations should also include:

  fluoride
  foaming Agents
  corrosion
  color
  odor
  pH

- Page 25, 2nd ¶: June 24 should be June 19, 1987. In regard to perchloroethylene, the statement should be that it will be regulated in Phase II.

- Page 25, top ¶: Did not meet filtration deadline and not mentioned is the Drinking Water Priority List and Substitutes deadline, which we did meet.

- Page 28, Table 6: Target and Congressional dates for radionuclides should be June 1989. Target date for Phase IV (disinfection/by-products) should be December 1990.

- Page 31, first full ¶: After 1981, EPA conducted many actions towards minimizing exposure to toxics:

1982 - ANPRM for VOCs, conducted a public hearing and four workshops across the country.

1983 - ANPRM for SOCs, IOCs, microbials, radionuclides public hearing and four public workshops across the country.

1984 - Proposed MCLGs for 9 VOCs.

1985 - Final MCLGs/Proposed MCLGs for 8 VOCs.

1985 - Proposed MCLGs for 43 SOCs, IOCs, and microbials.

- Nader report states that 2110 organics and inorganic chemicals have been detected in drinking water (2,090 are organic chemicals). We do not dispute the fact that 2110 chemicals have been identified (although we have not checked the 2110 for duplicates). We take issue with the significance and needed actions suggested in the report.

ATTACHMENT A

SUMMARY: EPA's Drinking Water Standards-Setting Program

EPA is in the midst of setting standards for a broad array of drinking water contaminants. Previous and current standards are summarized below.

- After setting the initial interim regulations in 1975/1976 for 21 contaminants, EPA set standards for four trihalomethanes (THMs) in 1979. THMs are indicative of a host of other disinfection by-products, and the 1979 standards provided a good first step in an area of mostly unknown health effects, treatment capabilities, and identified by-products.
- THMs (and other by-products) will be reevaluated and standards set by January 1991.
- Much remains to be determined about potential health risks of disinfection by-products (and research is continuing), but it would appear that ozone disinfection, which is an efficient disinfection process, may result in less harmful by-products. Contrary to CSRL suggestions, EPA is encouraging ozone usage.
- The next standards set were for the VOCs, which are the most frequently detected organic chemicals in drinking water after THMs. In addition, VOCs are also indicators of other possible contamination, as demonstrated in surveys of Superfund sites that show that VOCs are almost always present when other chemicals are found. In addition to standards, monitoring requirements were set for 52 unregulated VOCs.
- Regulations for microbiological contaminants are in the middle of the public comment period, having been proposed in November 1987.
- In the final stages of Agency review are proposed standards for 30 organic and 10 inorganic chemicals, which include the review of the 1975 interim regulations. Monitoring requirements will be set for nearly 100 organic compounds, most of which are pesticides.
- Radionuclides and other less frequently detected organic and inorganic chemicals are next for standard setting. These will be proposed druing 1988.
- Standards for at least 25 of the contaminants on the DWPL are next and will be set by 1991.

DRINKING WATER PROGRAM

Mr. THOMAS. We have dealt with a number of the issues that the group has raised. As a matter of fact, I think we are making good progress under the drinking water program with upgrading standards and with enforcing the new responsibilities contained in the reauthorized Safe Drinking Water Act. As a matter of fact, just as Senator Grassley was noting you will begin to see the results of what we are doing under the drinking water program because more and more communities and citizen groups are going to complain to you about the economic impact that these new requirements are having on them.

We have a substantial number of additional standards going into effect; we are taking a substantial number of additional enforcement actions; and the drinking water program has clearly been identified as one that is going to get increased attention over the next several years.

Senator PROXMIRE. I hope you will take the specific findings of the Nader group. I have known Nader, of course, for a long time, as all the Members of Congress have, and have great admiration and respect for the integrity that he has shown again and again and again, and repeatedly, he has been right. This is very shocking that one out of five public water systems was contaminated with chemicals.

I would like to know with as specific an analysis as you can, taking his standards, showing why, perhaps, they are wrong, showing what percentage of public water systems are contaminated by chemicals.

Mr. THOMAS. Senator, the issue in drinking water is that we have chemicals in our drinking water. As a matter of fact, we put them in our drinking water in an awful lot of places as we work on bacterial control.

Senator PROXMIRE. I understand; of course we do. But he says contaminated. He wouldn't consider when you put chlorine in water in order to provide protection that that would necessarily be contaminated. I am sure that they have standards that go beyond that, and the New York Times is certainly a responsible publication. They wouldn't pick something like this up and publicize it if they were simply taking whatever you put in water and saying that contaminates it.

Mr. THOMAS. Senator, I don't mean to trivialize the report of the Nader group. I also feel like much good has come from the Nader organization and I think they make a number of good points.

I met with him a couple of years ago to talk about the drinking water program. He made a number of points though, that were very consistent with the approach that we were trying to take with the drinking water program.

Senator PROXMIRE. Well, give me as a specific and detailed response on this as is possible. I am going to ask Mr. Nader to make a comment, too.

Mr. THOMAS. We will be glad to.

Senator PROXMIRE. Thank you. Senator Leahy?

Senator LEAHY. Nothing further, Mr. Chairman.

Senator PROXMIRE. Thank you very much.

Senator LEAHY. I do want to give Mr. Thomas a copy of this book, though. I didn't want to interrupt while he was talking. I give out presents now and again.

SUBMITTED QUESTIONS

[The following questions were not asked at the hearing but were submitted to the Agency for response for the record:]

QUESTIONS SUBMITTED BY SENATOR PROXMIRE

EPA'S CROSS-MEDIA OBJECTIVES

Question: GAO also talks about the importance of linking each goal to other goals, programs, priorities, and initiatives in order to reflect the Agency's cross-media objectives. In what ways does the Agency integrate its priorities and initiatives to achieve cross-media objectives?

Answer: Increasingly, we are recognizing that pollution control requires a cross-media perspective and approach. The development and implementation of cross-media objectives is a complex, scientific, programmatic, and organizational task. The laws that EPA has been implementing have predominantly focused on the media approach. EPA, our Regions, the States and the regulated community had the same focus for many years.

Over the last several years we have placed high priority on developing the desired cross-media approach. We are focusing much of our strategic planning efforts on cross-media issues in such areas as air toxics and groundwater protection. The FY 1989 Agency Operating Guidance placed the "cross-media" approach as a major priority of the Administrator. This guidance, for the first time, included a cross-media section that addressed several current high-priority efforts (Air Emissions from Waste Management, Pesticides in Groundwater, Title III Implementation). Our Senior Management Planning Session this year will devote an entire session to cross-media issues. Increasingly, as we are making program-specific decisions, we are looking at the cross-media aspects.

The cross-media imperative presents a major long-term challenge. At EPA, we are building a management team that is increasingly aware of cross-media issues and cognizant of other media impacts of program actions. We need to not only integrate our cross-media objectives in Headquarters, but also to build that approach in the Regions and State agencies. In many respects, the nature of our environmental problems forces the field offices to coordinate across bureaucratic media lines. Problems such as nonpoint source pollution, well head protection, and municipal incinerators all require experts from different media working as teams. EPA's Regions have been promoting better long-term, cross-media planning by Headquarters. With initiatives on many fronts, EPA is making progress.

EPA/STATE PARTNERSHIP

Question: Many states have been authorized or delegated operational responsibility for environmental programs. EPA refers to its relationships with these states as a "partnership" in achieving national environmental goals.

In its draft report GAO noted that oversight of these programs appears to be process-oriented, with particular emphasis on evaluating the states against various commitments, such as conducting a certain number of inspections.

Wouldn't a broader focus on overall program effectiveness or achievement of environmental results produce more meaningful assessments of state performance?

Answer: Yes. EPA is trying to develop a more environmental results-oriented program management system with the States. Our success in realizing the partnership has been limited both by lack of good indicators and monitoring data to evaluate State and EPA performance, and by the built-in need to oversee State performance in many of our programs using administrative measures.

EPA and State managers have therefore relied on activity-oriented performance measures (e.g., number of permits issued or inspections conducted) which are easier to track because the data are readily available. Nevertheless, we are attempting to develop better indicators of real environmental effectiveness to allow both EPA and the States to assess results rather than activity.

We will need to acquire better data to measure these indicators, and provide incentives for States to use them for setting priorities and reporting progress. One example we are considering is indicators to measure Superfund progress in terms of reductions in concentrations of environmental contaminants and reductions in exposure of human populations. As we develop better measures of environmental problem severity and overall program effectiveness, we will be able to raise the quality of oversight toward a more effective partnership.

In addition, the Agency is in an active dialogue with the States through the State/EPA Committee, on several projects designed to improve the relationship. Some examples include: more exchanges of State and EPA personnel; more comprehensive technology transfer and training; earlier and more effective participation of the States in the EPA planning process; and efforts to improve the effectiveness of oversight.

SCIENCE ADVISORY BOARD

Question: I understand that former EPA Deputy Administrator Al Alm is heading up a task force to examine EPA's long-term research goals and needs. What is the status of the task force's activities?

Answer: In mid-1987, the Administrator asked Mr. Alm to chair an effort under the aegis of the Science Advisory Board (SAB) to develop a strategy for environmental research which would guide EPA Research and Development activities into the 1990s and beyond. The resulting Research Strategies Committee of the SAB has involved the active participation of some 50 scientists from outside EPA and about half that number of Agency personnel.

Currently, drafts of the five chapters of the report are in various stages of completion. These chapters cover the following areas:

a. Sources, Transport and Fate
b. Exposure
c. Health Effects
d. Ecological Effects
e. Risk Reduction

A draft set of conclusions and recommendations will be the focus of Mr. Alm's steering group meeting on April 25. Mr. Alm will present a briefing on the status of his Committee's efforts at a meeting of the SAB Executive Committee on April 26. The final report should be completed sometime this summer.

REDUCING UNCERTAINTIES IN RISK ASSESSMENT

Question: You are requesting $10 million for reducing uncertainties in risk assessment. I understand in its draft management evaluation report, GAO states that EPA's emphasis on short-term research will not fill the current data gaps that reduce the quality of risk assessment. Do you agree with this assessment?

Answer: We believe that the overall research program for Reducing Uncertainties in Risk Assessment (RURA) should consist of both short and long-term projects. The results from this research should have broad application in the Agency and not be useful only in limited situations. Ideally, the short-term products of this research will be of immediate use to the Agency and provide the basis for long-term improvement in the science of risk assessment. Much of the research needed to reduce uncertainties in risk assessment is iterative in nature with research progressing in stages but with significant outputs at each stage. Therefore, we plan a balanced program between both near-term and long-term research.

Question: Could you tell me how the "reducing uncertainties in risk assessment" (RURA) program will relate to the long-term strategy being studied by the Alm task force?

Answer: We believe that the research program to reduce uncertainties in risk assessment is a timely and effective way to focus more attention and resources on the need for long-term research to improve risk assessments. The research program is designed to provide near term as well as longer term products. The Task Force on Long Term Goals of Environmental Research was briefed on the program and its implementation. Overall, we feel that the research program to reduce uncertainties in risk assessment is consistent with the intent and current direction of the Alm task force. In fact, we hope that the planning, implementation, and management of the RURA program will serve as a useful model for future EPA research endeavors.

COMPARATIVE RISK PROJECT

Question: To what extent does your research budget reflect the results of your own recent study, the "Comparative Risk Project," which identified high-risk issues that receive limited Agency resources?

Answer: There is a complementary relationship between our research program and the "Comparative Risk Project." The "Comparative Risk Project" ranks the importance of various environmental issues based on available information. The research budget addresses needs for information to reduce scientific uncertainty regarding risk. The "Comparative Risk Project" was one of the many pieces of information used by ORD, through the Research Committee process, to evaluate and direct the focus of our research program. For example, many of the scientists involved in writing the "Comparative Risk Project" were involved in the development and review of the proposed RURA program. The perspective provided by these individuals was extremely valuable in helping to design a research program to address the major uncertainties in determining health risks from various environmental exposures.

RISK ASSESSMENT-NATIONAL SCIENCE FOUNDATION

Question: Mr. Thomas, in fiscal 1987 the National Science Foundation awarded $136,000 to the Council on Environmental Quality to provide partial support for the preparation of a handbook on risk assessment. The handbook will "develop a comprehensive guide to recent developments in risk assessment theory and methods." Is EPA involved in this project?

Answer: EPA has not been involved in this project. Neither the Council on Environmental Quality nor the National Science Foundation approached EPA for assistance in preparing this handbook.

Question: Another $74,600 award was made by the National Science Foundation to support a Workshop Series on Understanding Risk Assessment. Frankly, I'm somewhat surprised that NSF funds are being used for these risk assessment initiatives when EPA plans such a pivotal role in this area. Could you tell us how your risk assessment program relates to the activities being funded through NSF? I'm curious as to why NSF should be providing any support for this kind of work.

Answer: EPA's and NSF's risk assessment programs have differing objectives. NSF's goal is to educate the scientific community, while EPA's primary concern is to conduct non-technical workshops geared toward improving the capabilities of Regional and State personnel involved in environmental issues.

INTERAGENCY RESEARCH TRANSFERS

Question: In fiscal 1987 EPA transferred $18,885,000 to other agencies for research and development projects. EPA also received $12,145,800 for R&D work from other agencies. What would happen if we decreased ORD's budget by, say, $5,000,000 so that there was a balance between R&D funds flowing into and out of the agency?

Answer: The effect of a $5,000,000 decrease in the R&D budget based on work performed in FY 1987 would have a serious impact on our ability to conduct our FY 1989 program. Our efforts in collaborative research are not always reflected in the same outflow/inflow of resources to/from other agencies. Depending on research needs which vary from year to year, the Agency needs this flexibility to effectively manage its cooperative programs.

Although the Office of Research and Development transfers a portion of its funds to other agencies, it is not done with enough regularity to support a one time adjustment of the magnitude suggested. Inherent in these numbers is part of EPA's effort to coordinate research among it counterpart research agencies. Often EPA participates with other agencies in performing joint research and in order to avoid duplication will ask the participating agency to adjust a given research project to incorporate EPA needs. Additionally, each Agency has its own respective research goals and without control over funds there is little that can be done to assure that EPA goals are included and met.

Secondly, EPA makes every effort not to duplicate programs and facilities. If an Agency is uniquely qualified to conduct research in a special area, EPA generally cooperates with that Agency to insure that EPA research needs are met rather than duplicate facilities and/or expertise.

Question: $1.4 million of R&D funds were transferred to NSF. How were these funds used?

Answer: The $1.4 million was provided to NSF's National Center for Atmospheric Research (NCAR) for development of a state-of-the-art Regional Acid Deposition Model. NCAR has unique expertise in the development of regional transport models. EPA provided funding to NCAR to adapt their existing regional transport model to acid deposition.

The model will synthesize the relevant knowledge of acid deposition into a mathematical framework for assessing the effects of emissions and proposed emission controls on acidic deposition. Key issues in acid deposition pathways will also be examined. The model is currently being operated at the State University of New York at Albany where it will be refined and evaluated.

Question: Almost $4 million was transferred to the Commerce Department from the R&D account. How were these funds spent?

Answer: Under this Interagency Agreement (IAG) personnel from the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce provide critical meteorological expertise needed by EPA in the development and evaluation of air pollution monitoring models such as the Regional Oxident Model (ROM). Under the agreement, NOAA provides the personnel while EPA supplies the needed salary money and some expenses, including domestic travel. This interagency cooperation between NOAA and EPA (and its predecessor agencies) has existed for over 30 years.

The specifc numbers and locations of the NOAA personnel are as follows:

Atmospheric Sciences Research Laboratory Research Triangle Park, NC	38
Environmental Monitoring Systems Laboratory Research Triangle Park, NC	2
Office of Air Quality and Planning Standards Research Triangle Park, NC	7
Environmental Monitoring Systems Laboratory Las Vegas, Nevada	1
Region III - Philadelphia, PA	1
Region IV - Atlanta, GA	1

Question: Page E-10 of your justification indicates that that you are requesting $52 million for acid rain research, a slight decrease below the current level of funding. I note that most of the federal government's acid rain research is conducted by the Department of Energy (DOE). Are you transferring R&D dollars to DOE for such research? If so, how much does it amount to and how is it being used?

Answer: The majority (60%) of Federal (NAPAP) research on the causes and effects of acid rain is funded and conducted by EPA, not DOE. DOE funds another research program called the Innovative Clean Coal Technology (ICCT) program which is related to acid rain, but is not part of NAPAP. This DOE research program is a parallel program to develop a new generation of coal-based technologies which can control acid rain precursor emissions more effectively and economically than conventional technologies.

EPA does perform some work with help from DOE's National Laboratories. This small amount of research is accomplished through Interagency Agreements. Below is a listing of the projects, amounts, and the specific DOE laboratory performing the $1.9 million of cooperative EPA/DOE acid rain research.

Amount	Title of Research
Oak Ridge National Laboratory	
$125,000	Direct/Delayed Response Project and Soil Survey: Data Analysis Support
113,000	National Surface Water Survey: Data Management
100,000	Risk Assessment Protocols: Technical Assistance in Development
297,000	Aquatic Effects: Environmental Analyses Support
Pacific Northwest Laboratory	
$130,000	Synthesis and Integration Project, Forest Response Program: Coordination and Support Staff
8,710	Acid Rain Watershed Modeling Project
160,000	Acid Deposition and Atmospheric Research Division: Technical Coordination and Support
Pacific Northwest Laboratory	
$120,000	Acid Deposition and Terrestrial Research: Technical Coordination and Research Support
437,000	Aquatic Acid Deposition Research Program: Technical Coordination
150,000	Final National Acid Precipitation Assessment Program (NAPAP) Assessment: Economic Analyses
Brookhaven National Laboratory (continued)	
$60,000	Materials and Aerosols Research
Lawrence Livermore National Laboratory	
$224,961	Comparison of the Response of Mature Branches and Seedlings of Pinus Ponderosa to Atmospheric Pollution
Idaho National Engineering Laboratory	
$5,000	Ecological Effects Research, Monitoring and Assessment Program: Strategy Development

ACID RAIN RESEARCH COORDINATION WITH DOE

Question: What sort of mechanism do you have in place to assure that acid rain research performed by EPA is not duplicated by DOE and vice versa?

Answer: NAPAP, which is responsible for directing research by the various Federal agencies (i.e. DOE, EPA, NOAA), provides the mechanism to assure that duplication of research does not occur. For example, each NAPAP research task group has a leader with the coordinating responsibility for the research conducted within the task group. In addition, the Interagency Science Committee within NAPAP oversees research conducted by the seven research task groups to assure duplication does not occur. This process assures that there is no duplication of effort and the results are fully utilized.

EPA PRIORITIES/RISK ASSESSMENT

Question: In February 1987, EPA issued a comparative risk study entitled "Unfinished Business: A Comparative Assessment of Environmental Problems". The issue of priorities is an extremely significant one when you're dealing with limited resources as we of course are. The study pointed out that, and I quote, "EPA's priorities appear more closely aligned with public opinion than with our estimated risks."

An article appearing in the Southern Illinoisan on January 13th of this year claimed that EPA spends too much of its resources on cleaning up toxics which are at most minor causes of cancer and spends too little on the more dangerous ones.

The article states that EPA receives about $2.7 billion to address 11,000 environmentally-induced cancer cases each year and thus spends about $250,000 per case. However, the types of substances targeted by EPA cause fewer than 8% of American cancer deaths, according to two leading British epidemiologists.

EPA states in one of its own publications: "The rankings by risk do not correspond well with EPA's current priorities. Areas of relatively high risk but low EPA effort include: indoor radon; indoor air pollution; stratospheric ozone depletion; global warming; non-point sources; and discharges to estuaries, coastal waters, and oceans... Areas of high EPA effort but relatively medium or low risks include: RCRA sites; Superfund; underground storage tanks; and municipal non-hazardous waste sites."

Would you say this situation is changing? To put it another way, are EPA's programs being realigned to meet true risks rather than public perception of risk?

Answer: EPA considered the results of the "Unfinished Business" report very carefully during the budget formulation process.

Through its authorization and appropriations committees, the Congress plays a most significant role in determining the Agency's budget priorities. The magnitude and distribution of risk to people and ecosystems are issues both the Agency and Congress should take into account in identifying priorities for funding. Where there is flexibility in the statutes, other factors that should be considered in setting priorities include the technical feasibility of control options, public perceptions, equity, the social value of the activity causing the problem, and the opportunity for personal action to incur or avoid the risk. These factors and existing legislative mandates influence EPA's options for how best to respond to problems and fund priorites.

For instance, the RCRA legislation spells out a number of activities that the Agency must perform regardless of whether the risk is "high or low". Similarly, the Superfund program has its funding levels set for several years. However, some of the high risk areas such as stratospheric ozone depletion and global warming are receiving substantially higher funding requests in fiscal year 1989 than we provided in previous years.

One other point should be made in reference to the Southern Illinoisan article which says that EPA spends about $250,000 per cancer case. This statement is neither fair nor accurate. EPA is concerned about effects beyond those of cancer, as emphasized in the "Unfininished Business" report. Along with cancer, the report looked at a host of other human health effects, ecological effects, and welfare effects.

Question: In last year's House hearing, Mr. Thomas, you said that in order for the agency's priorities to be driven less by public opinion and more by true risk assessment, EPA needs to educate the public as to what the issues are, how EPA is dealing with those issues, and what the trade-offs are.

What steps have you taken to implement such a public education policy? Please cite specific examples.

Answer: One of EPA's important objectives is to bring public and expert understanding of risk closer together, so that we can get the maximum return on our investment in environmental protection.

The publication and distribution of the "Unfinished Business" report, to which you referred in the previous question, was a major effort towards this objective. I and others on my staff have also talked about this report in testimony, speeches and articles during the past year. In addition, we have helped sponsor several projects in different parts of the country where the same type of analysis is being applied to smaller areas. We also recently helped sponsor a conference on setting environmental priorities, attended by staff from the Congress, State governments, industry, public interest groups, and the press, where we talked about the problem to which you refer.

Other examples of EPA activities designed to educate the public on risk include:

- Workshops and other dissemination activities sponsored by the Office of Policy, Planning and Evaluation. These workshops create a forum to build communication and understanding between journalists, the scientific community and risk managers.

- Risk information-sharing forum, sponsored by the Office of Pesticides Program, which augments the Pesticide Program's public communication efforts related to the National Pesticides Survey. Through these forum, participants identify and anticipate risk communication issues generated by the National Pesticides Survey, identify public communication materials and offer expertise in communications.

- A series of publications on the subject of risk including the following items:

  -- Seven Cardinal Rules of Risk; a leaflet for governmental and industry officials who have to communicate risk decisions to the public. Currently being printed.

  -- Assessing Environmental Risk; a comprehensive pamphlet for the general public explaining how the agency goes about making risk decisions. In manuscript form.

  -- Environmental Risk; the November 1987 issue of the EPA Journal, fourteen articles on various aspects of risk.

- Through the Office of Community and Intergovernmental Relations, we have endeavoured to begin a continuous dialogue with State environmental officials on the subject of risk and the importance of risk management to our decision making process. These efforts have included discussions with States the provision of materials and technical information on risk analysis, and direct technical assistance to aid States in developing risk assessment capacities.

In a broader sense, many of the Agency's interactions with the public involve a measure of education along these lines with different audiences. We do this every time we answer questions from citizens, address meetings, talk with the press and publish documents. At the same time, though, we recognize that we have a responsibility to improve how the public understands risk. This is why I say that our objective is to bring public and expert understanding of risk closer together.

EPA PRIORITIES/LEAKING UNDERGROUND STORAGE TANKS

Question: The draft GAO management study I referred to earlier states that one area of medium to low risk but with high EPA effort is leaking underground storage tanks. If this activity is low risk, then I would think it would be a low priority. Why are you devoting five additional workyears to this program?

Answer: While the risk proposed by leaking underground storage tanks may be moderate for any given facility, the number of underground storage tanks (over 1.8 million) presents a formidable environmental problem to manage. Additionally, the $50 million and 90 FTE requested represent a low EPA effort with high returns because we are devoting these limited Federal resources to building State programs. Regions are assisting States - leveraging our limited EPA resources - to build strong State UST cleanup and prevention programs. The additional five workyears are requested to increase Regional staff to work with States in this effort.

RESOURCE SHIFTS FROM LOW-RISK/HIGH EFFORT TO HIGH-RISK AREAS

Question: What resource shifts have been made from low-risk high effort areas to high-risk/low-effort areas?

Answer: When developing the budget the Environmental Protection Agency considers many factors other than risk. Although risk is a component used in establishing budget priorities, other considerations, including statutory responsibilities or whether the effort is properly undertaken at the Federal, State, or local level, influence our budget decisions. Shifting large resource amounts from one program to another could undermine well established and effective programs.

The President's Budget request reflects our consideration of all of the above mentioned factors. All the funding decisions included in the budget represent a careful balancing of these factors. It is therefore impossible to identify any one funding decision that was made soley on risk. While those problems that have high risk associated with them deserve our attention, high risk dosen't always equate to a corresponding investment of resources.

In our 1989 request we have recognized the need to address problems with associated high risk. For example, we have given additional emphasis to programs like indoor radon and stratospheric ozone depletion/global climate change, both of which have been identified as having high risk.

BARRIERS TO SHIFTING RESOURCES FROM LOW-RISK TO HIGH-RISK AREAS

Question: What barriers do you face in shifting resources from low risk to high risk areas?

Answer: There are several factors that preclude shifts of resources from low risk areas to high risk areas. Before a decision to shift resources to programs that address high risks can be made, consideration must be given to the impact on the Environmental Protection Agency's ability to meet its many statutory responsibilities.

Other factors to be evaluated include: whether the risk is being addressed more appropriately by another Federal agency or by State and/or local governments, the disruption to existing programs and the foregone risk reductions that would result from resource shifts from those programs.

CONTRACTS MANAGEMENT

Question: In a January 1985 study entitled "EPA Should Better Manage Its Use of Contractors" GAO reported that EPA obtained about 88 percent of its contract support through cost-reimbursable contracts, which provide EPA maximum flexibility in accomplishing objectives, but offer little incentive for the contractor to control costs. GAO said its review as well as internal reviews have found that a portion of work being performed under cost-reimbursable contracts is suitable for fixed-price contracts.

What percent of EPA's current contract support is provided through cost-reimbursable contracts?

Answer: During FY 87, 84.9% of EPA's contract support was provided through cost-reimbursable contracts.

Question: Has the percentage been increasing or decreasing in the last five years?

Answer: Percentages for the last five years are listed below.

	TOTAL	% COST-TYPE
FY 83	$353.3M	89.3%
FY 84	$491.4M	90.0%
FY 85	$621.4M	87.0%
FY 86	$597.3M	89.9%
FY 87	$970.1M	84.9%

Question: I understand that EPA has initiated a contracts management improvement program. Can you tell me about this program and how it will alleviate the problems outlined in the report?

Answer: The contract management improvement program was initiated in March 1985 as a direct response to the GAO study. It addressed the deficiencies noted in the study and concentrated on four primary areas:

Increasing Resources for Contract Management -Of the ninety work-years devoted to contract management functions, fifty-five are located in contract administration sections, where their sole responsibility is contract management.

Strengthen the Project Officer System - We have developed a Project Officer certification program with formal training and experience requirements. All project officers are required to have their contract management responsibilities reflected in their position descriptions and performance standards.

Improve and Simplify the Contract Management Process - We conducted a review of the contract management process at EPA and implemented appropriate recommendations. Examples of these actions are revising performance standards to increase emphasis on contract management, establishing a delivery order tracking system, and revising training manuals to stress administration. Additionally, EPA has installed a fast-track close-out system.

Provide Additional Technical Guidance and Assessments - We have emphasized the use of fixed-price contracts wherever possible and have provided training on the development of more specific statements of work. We have issued a Cost Analysis Guide, established a contractor purchasing system review team, and established a contract management review team.

All of the initiatives started under this program have either been completed or are operating as ongoing programs. These initiatives specifically addressed the deficiencies noted in the GAO study and were designed to improve our contract management abilities. We are continuing to stress contract management improvements by developing program specific project officer training, increasing our contract management reviews, and seeking additional personnel to manage EPA's contracts.

Question: Can you quantify the savings you expect to achieve in fiscal 1989 as a result of this program?

Answer: We are managing our contracts much more closely and effectively. Because of our efforts, we are saving government money by finding and resolving problems early. However, we cannot quantify the extent of this savings. Most importantly, the Agency is establishing a strong system of accountability for the management of its contracts. EPA's program offices, procurement operation, and contractors are all responsible for providing information and following guidelines to create an efficient, responsible contract management program.

Question: How much are you spending on the contracts management improvement program currently and how much are you requesting for the program in fiscal year 1989?

Answer: Over 90 workyears are devoted entirely to contract management functions. This figure includes employees devoted exclusively to contract management, contract close-out, contract administration training, and various reviews.

In addition to human resources, we invest over $150,000 in contract administration and project officer training. Travel for our reviews, training, and other contract management functions exceeds $100,000.

As we continue to develop improved contract management techniques at EPA (e.g., automated systems, improved training), the expense of this priority will increase. We expect these resources to remain essentially level in FY 1989.

PERSONNEL MANAGEMENT IN THE SUPERFUND PROGRAM

Question: We have been hearing from you for some time now that one of the difficulties with the Superfund program is the Agency's inability to hire and to keep qualified engineers and scientists. Last year, you told us you were examining ways to improve your personnel management system, including the possibility of offering pay incentives. Would you report to us the results of that examination?

Answer: The Agency's examination of ways to retain our engineers and scientists has resulted in the development of position classification guidance on how to assign grade levels to Superfund's remedial project managers and on-scene coordinators -- two primary functions where scientific/ technical employees work. This position classification guidance specifically outlines functions where credit should be granted to the performance of particularly complex and sensitive work. So far, over 25 promotions to grade 13 and above have been approved under this guidance and proposals for others are in the "pipelines."

The possibility of obtaining a special salary system for employees in these occupations is not good. In its report on workforce management in Superfund, GAO shared EPA's expressed concern that the Federal government's ability to compete for scientific/technical talent with the private sector is hampered by the comparative salary structures. GAO further expressed strong opposition to special salary systems for any single occupation of Federal employee, fearing the inequities of such systems.

Question: How would you assess your current personnel situation?

Answer: The current personnel situation in Superfund is quite good. Uncertainties in the first quarter of FY 1987 over Superfund's reauthorization resulted in recruitment and retention issues. The Agency has taken the appropriate steps to resolve these issues. Superfund will use all of its authorized workyears in FY 1988 after a lapse of some 240 workyears in FY 1987. Our concerted recruitment efforts are largely responsible for this full utilization. The "quit" rates that Superfund experienced in early FY 1987 have also declined. According to the GAO report, "quit" rates rose from 4.3% in FY 1985 to 10% in FY 1986. The "quit" rate in FY 1987 was 9.9% and, based on current projections, will decline to 8.0% in FY 1988.

SUPERFUND DE MINIMIS SITES

Question: The Superfund Amendments and Reauthorization Act (SARA) authorized "de minimis" Superfund settlements. These settlements allow small contributors at Superfund sites to pay more than their share in return for early settlement and a release from future liability, and are intended to simplify EPA negotiations with principal waste contributors.

To date, only one such settlement has been made -- at the Cannons Engineering site in Bridgewater, MA. Apparently, the de minimis process is much more complicated than anticipated. Can you tell us what progress you are making in implementing the de minimis provision?

Answer: To date we have completed 2 de minimis settlements; Cannon Engineering Sites and Ottati and Goss site in New Hampshire. A third de minimis settlement is expected to be lodged with the court in April 1988. We feel we are making progress in implementing the de minimis provisions. In our April 6, 1988 response to the Congressional request for de minimis information, we have provided confidential information on settlement negotiations at 23 sites. De minimis parties have also been involved in global settlements (involving both de minimis and de maximus parties) at a number of sites.

It is true that the de minimis process is more complicated than was originally anticipated. Agency efforts have focused on developing a process to streamline de minimis settlements and to simplify them as much as possible. We are currently working on a strategy which addresses the streamlining of this process. This strategy is expected to be finalized in early summer 1988.

Question: A group of House members including Reps. Dingell, Lent, Eckart and Glickman in a letter to you this past February urged EPA to reevaluate its approach so that the de minimis provision can be more effectively implemented, and that de minimis settlements could be reached as early as possible in the clean up process. What is EPA doing to honor this request?

Answer: EPA has been evaluating its approach to de minimis settlements. The Agency has been investigating the possibility of completing de minimis settlements early in the RI/FS process. Unfortunately several stumbling blocks have been encountered. A prerequisite to entering into a de minimis settlement is that a complete PRP search must be completed and data compiled on the volumetric contribution of each PRP. In sites where there are hundreds or thousands of PRPs this naturally takes some time to complete. The other problem encountered is that early (pre- or early RI/FS) settlements must rely on cost estimates based on little or no data. In other words we must estimate the cost for cleanup when we do not have information on the extent of contamination nor know the remedy.

To mitigate these complications we are considering a number of options. One possibility is to provide "Two-Tiered" settlements: we can focus our earliest efforts on the smallest de minimis generators and settle later with larger (by volume) de minimis PRPs. This would alleviate some concern about miscalculating costs since the total dollar value of the de minimis settlement would be quite small.

EPA is also encouraging the Regions to be more aggressive in pursuing de minimis settlements at appropriate sites. We are currently developing a strategy to assist the Regions in targeting appropriate sites and in providing incentives to settle. We expect this strategy to be finalized in early summer 1988.

Question: The letter also called for a report detailing the status of settlement negotiations with de minimis parties at each site listed on the National Priorities List. If this report has been completed, please provide a copy of this report for possible inclusion in the hearing record. If not, can you tell us when it will be available?

Answer: The report has been completed. However, it contains confidential information and therefore will be sent to you under separate cover.

SUPERFUND ENFORCEMENT

Question: You are requesting $131.5 million for Superfund enforcement activities, an increase of eight-and-a-half percent over current funding, reflecting expanded efforts to secure responsible party cleanups and to pursue cost recovery efforts.

I understand that striking the right balance between fund-financed clean ups and private party clean ups has been a major problem in the Superfund program, but I am glad to see that you are returning to a greater emphasis on private party clean ups because we just can't afford the numbers of clean ups that are being paid for with Superfund dollars. I would like to see Superfund monies used principally for "orphan sites" -- where a responsible party cannot be located.

In a recent issue of Pesticide and Toxic Chemical News Thomas Grumbly, president of Clean Sites, Inc, was quoted as saying "EPA and [the Department of Justice] have not aggressively used their authority to force responsible parties who refuse to join settlements to accept liability for clean-up." Grumbly claimed if corporations believed they would be sued for not entering a voluntary settlement, they might have more incentive to do so.

This view was reflected in the House Appropriations Committee's recent investigative report on the status of the Superfund program. The report says, and I quote, "a former Department of Justice assistant attorney general testified that EPA has made it more inviting for potentially responsible parties [PRP's] to reimburse EPA for cleanups rather than have the PRP's actually execute the cleanup. He expressed the view that this preference was deliberate on EPA's part and that EPA was actually not very interested in encouraging [private party] cleanups."

Why haven't you encouraged private party clean ups in the past and how do you plan to change the perception that you are not interested in encouraging PRP cleanups?

Answer: The Agency has attempted to encourage private party cleanups. Through fourth quarter 1987, the Agency has obtained settlements with private parties for 243 removal actions, 167 remedial investigation/feasibility studies (RI/FS), 66 remedial design/remedial actions, We are aware, however, that a perception exists that the Agency is reluctant to use Section 106 enforcement authority against non-settling parties. We have therefore established an incentives/disincentives workgroup composed of representatives from Headquarters, the Regions, and the Department of Justice which will focus on increasing the number of settlements while ensuring that recalcitrant non-settlers are subject to aggressive enforcement follow-up.

A related initiative to increase the use and timeliness of Section 106 judicial actions is currently underway. As part of this initiative, criteria are being developed to assist in the identification of appropriate cases for such actions.

Question: How many responsible party settlements were made in fiscal year 1987 and how many are anticipated for fiscal 1988 and 1989?

Answer: This information is summarized in the following table.

Number of PRP Settlements, by Activity, Achieved
in 1987 and Planned for 1988 and 1989

Fiscal Year	Removals	RI/FS	RD	RA*	Cost Recovery**
1987	43	46	5	7	24
1988	58	33	54	19	51
1989	55	33	70	35	56

Key

PRP - Potentially Responsible Party
RI/FS - Remedial Investigation/Feasibility Study
RD - Remedial Design
RA - Remedial Action

* RAs represent start of Remedial Action. Normally the settlement for the RA occurred with the RD in a prior fiscal year.

** Cost Recovery is cases referred to Department of Justice.

COST RECOVERY

Question: According to the House Superfund report, $60 million has been recovered to date in costs previously paid by the Superfund trust fund and $700 million is "ripe for recovery." How much do you anticipate you will recover in fiscal years 1988 through 1991?

Answer: Based on current workload models, cases amenable for recovery, and recovery projections, it is expected that $52 million, $70 million, $82 million, and $135 million will be recovered for fiscal years 1988 through 1991, respectively.

SUPERFUND COST RECOVERY

Question: Of the Superfund moneys expended to date, what portion will not be subject to cost recovery and could you explain why this is so?

Answer: Section 107 of CERCLA provides that all costs of response actions which are not inconsistent with the National Contingency Plan (NCP) are subject to cost recovery. Current indications are that of the costs subject to cost recovery, some portion will not be recovered due to the financial viability of the responsible parties. For projecting revenues to the Trust Fund, the Program assumes that at 10 percent of all sites there will be no responsible parties located. At those sites where responsible parties are located, it is assumed that approximately 25 percent will be financially non viable and make some sort of contribution and that approximately 35 percent will be bankrupt. Therefore, we are anticipating that at only 35 percent - 40 percent of Superfund sites will we be able to cost recover.

A certain portion of the CERCLA costs expended are not site specific costs. These costs, called indirect costs, generally fall within the following categories: Administrative Management, Research and Development, Non Site Equipment, Program Management, and pre-response assessments and investigations. Through the Agency's indirect cost allocation model, many of these costs are included in the response costs sought from PRPs. However, certain aspects of the Agency's CERCLA costs are not currently included in response costs sought from PRPs. Alternative models for the distribution of indirect costs (including the model now in use) are under review by the Agency.

SUPERFUND ENFORCEMENT EFFORTS

Question: Have you performed any analyses to determine whether it would be more productive to use more of your limited resources for enforcement activities; that is, could EPA get more for its dollar in terms of the number of National Priorities List sites that could be cleaned up by shifting more of its resources into enforcement?

Answer: Since the inception of the program through 1987, Potentially Responsible Parties (PRP) have conducted Remedial Investigation/ Feasible Study (RI/FS) at 167 of 599 total sites with RI/FS. This overall ratio of 1 of every 3.6 starts has improved to 1 of every 2.4 starts in 1987. During the past year, the Agency has placed significant emphasis on placing qualified Civil Investigators in each of the Regions. This effort is aimed at strengthening the PRP searches early in the process. Early identification of PRPs and documentation of their role at the site will significantly improve the Agency°s negotiation position and, hopefully, settlement rates. Additionally, the Agency is currently undertaking a review of the enforcement program to determine which areas of policy and program implementation require improvement.

SUPERFUND/ENFORCEMENT EFFORTS

Question: Please outline, for the record, the actions you have taken to ensure that all future moneys expended from the fund will be properly accounted for to facilitate cost recovery.

Answer: Our most recent audit in FY 1986 confirmed that our accounting for Superfund expenditures has improved significantly since the early years of the program. Systems for our in-house costs have been strengthened to the point where the few problems we find are the result of isolated errors as opposed to systematic problems. In, addition, the Agency is conducting a pilot study to determine whether a system of optical disks records management meets the needs associated with cost re-covrery. The study has indicated a significant time advantage in preparing documentation packages to support litigation and a reduction in storage problems.

The last major areas that we are strengthening are the costs accounted for by States and other Federal agencies. To improve States' cost-accounting, we implemented a guidance and outreach program last fall that began with publishing and distributing a guidance document on Superfund Financial Management and Record Keeping. We distributed this document at Regional training sessions which included at least one representative from each State. The goal of these sessions was to strengthen the relationship between EPA regional and State financial management officers and share the experience, systems and procedures that we have found successful. In addition, we began a Management Assistance Program which includes visits to States to review their accounting and management systems to assure that Superfund expenditures are accurately recorded and adequately documented.

We are currently preparing other Federal agency guidance. When that is completed we will begin training sessions similar to those that we found successful with the States.

EVALUATION OF THE ENFORCEMENT PROGRAM

Question: The report accompanying the fiscal year 1988 Senate Appropriations bill directed that EPA undertake a formal evaluation of Superfund enforcement activities. I have not seen this report. When will it be released?

Answer: EPA will conduct a formal evaluation of the Superfund Enforcement Program. The Agency is currently reviewing a proposed workplan for the study. We anticipate that the report will be completed in October 1988.

Question: Industry and others have criticized EPA's organizational structure, which provides for separating the legal and technical enforcement staffs in the regions and at headquarters, as one that leads to inefficient management of the Superfund enforcement program. What has EPA done to analyze the efficiency of the structure, what did it find, and have or will any changes be made in this structure?

Answer: There are no existing or on-going studies analyzing the efficiency of the current Agency enforcement organizational structure. As noted, EPA's present structure has separate legal and technical offices. This structure is but one of many different organizational options that could be employed by the EPA enforcement program; each with its own advantages and disadvantages. On balance, the Agency believes that it can implement an effective enforcement program under the current structure.

SUPERFUND -- ENFORCEMENT

Question: Industry has criticized EPA as requiring an inordinate amount of time and resources -- termed transactional costs -- to be spent studying a site in relation to the costs of cleaning up that site. For those sites that have been cleaned up to date, what was the breakdown between transactional costs and cleanup costs?

Answer: The Agency has deleted twelve sites from the National Priorities List (NPL) and published notice of intent to delete at three additional sites. At those sites, the Agency has obligated a total of $15.2 million. These obligations encompass:

Direct Site Work	-	$ 14.5 million (95%)
Site Support	-	$ 600 thousand (4%)
Program Support	-	$ 79 thousand (1%)

Within the Direct Site Work category, $13.3 million or 91% is attributable to site cleanup. The remainder is associated with activities essential to the ultimate cleanup of the site, such as pre-enforcement, pre-remedial, engineering study and design, operations and maintenance, and related removal assistance activities.

SUPERFUND/TEXAS EASTERN PIPELINE CASE

Question: Last November, Texas Eastern Pipeline was fined $15 million for illegally dumping cancer-causing PCBs in 14 states. The Senate Environment Committee charged EPA with being lax in not discovering this illegal dumping sooner. The company's reports showed a big gap between residues removed and residues disposed of. Senate investigators claimed that EPA officials should have questioned this discrepancy and would have discovered the illegal dumping earlier.

Do you agree with this criticism and, if so, what are you doing to tighten controls in your Superfund enforcement program to ensure this situation does not recur?

Answer: With regard to tightening controls under Superfund, it should be noted that the responsibility for this case lies within the jurisdiction of the Toxic Substances Control Act, rather than Superfund, since PCBs are the main waste materials of concern in the case. Superfund has been involved to the extent that in the Spring of 1987, EPA and many States performed Preliminary Assessments/Site Inspections under Superfund. None of these sites scored high enough to rank on the National Priorities List.

EPA has taken several measures to help ensure that the Texas Eastern situation does not occur again. First, EPA has amended its enforcement strategy to focus more on disposal-related activities, particularly large volume handlers of PCB wastes. Second, EPA has issued administrative subpoenas to other natural gas pipeline transmission companies to obtain records on their PCB-related activities. Third, EPA is requiring that natural gas pipeline and transmission companies that historically have used PCBs obtain approval from EPA for their pipeline removal and abandonment programs. Approval will be granted only after a demonstration to EPA of an acceptable procedure for decontaminating the pipeline, and a finding by EPA that the procedure will not present unreasonable risks to public health or the environment. Finally, EPA is about to propose new regulations requiring the manifesting of PCB wastes for disposal. This should aid EPA enforcement to better track the disposal of PCB wastes from the point of generation through disposal.

After complex and protracted negotiations, EPA and Texas Eastern are close to a final settlement of the case pertaining to PCB dumping. This settlement will conclude the negotiations that resulted in the agreement-in-principle announced last November. To date, there has been no $15 million fine. Once a final settlement is reached, however, such a fine will be paid and the Agency will inform Congress of the settlement.

SUPERFUND - NATIONAL CONTINGENCY PLAN

Question: An article published in "Inside EPA" last month stated that EPA staffers contend that vague language contained in the draft national contingency plan (NCP) would give potentially responsible parties (PRPs) more leverage to justify less protective cleanup levels. The article states, and I quote, "Agency staffers say that without clear language explaining the agency's policy for setting cleanup standards for cancer causing chemicals, PRPs will vie for less costly cleanups towards the lower end of EPA's specified risk range - negotiating settlements with EPA that will put the public at risk."

Although vague language would allow you flexibility and perhaps permit you to reach a settlement faster, it might have an adverse effect on human health. How do you respond to these criticisms of the draft national contingency plan?

Answer: The draft NCP specifies how the Agency intends to implement the Section 121(d) requirements which address protectiveness and compliance with the applicable or relevant and appropriate Federal and State public health and environment requirements (ARARs). The draft describes what is considered a protective remedy with respect to hazardous substances and how remedy selection should achieve that level of protectiveness.

The Agency believes that the language currently in the draft NCP requires the selection of protective remedies. This language also provides ample flexibility to make appropriate site-specific decisions concerning acceptable protective cleanup levels within the settlement context.

GAO REPORT ON EXTENT OF HAZARDOUS WASTE PROBLEM

Question: Some very disturbing findings were highlighted in a GAO report entitled "Superfund: Extent of Nation's Potential Hazardous Waste Problem Still Unknown" issued in January.

To begin with, GAO claimed that the nation's potential hazardous waste problem was much more extensive than EPA estimated. GAO estimates that up to 425,000 sites may need to be evaluated as opposed to EPA's list of 27,000 sites. How do you explain this very large discrepancy?

Answer: The GAO report said there are nine categories of potentially hazardous waste sites totaling 425,000 sites which should be in CERCLIS. CERCLIS currently contains 29,000 sites. This number will increase as potentially hazardous sites are identified by the States, communities and other parties. These non-Federal sources may add up to 2,000 sites to the CERCLIS inventory per year. It is an Agency goal to conduct a preliminary assessment at every site within its first year on the inventory.

Of the nine categories, EPA believes that the following two should not be included. The 190,000 RCRA facilities consisting of municipal landfills, town dumps, and non-hazardous industrial landfills are not appropriate for the inventory. While some municipal landfills have had some hazardous waste deposited, most have not. Facilities that received only household waste were not even subject to the Section 103(c) notification requirements. The 117,000 Class 5 Underground Injection Wells are shallow and non-hazardous by definition. The potential for vectorial contamination exists but is not relevant for inclusion in CERCLIS.

There was a further distortion of 4,500 sites due to the method used for counting Federal facility sites. Federal facilities are listed in CERCLIS as a whole facility; GAO counted each facility area as a potential site.

To date, EPA has no indication that there are hazardous waste problems on the balance of sites identified by GAO. We will add all sites identified by all non-Federal sources, which we anticipate will amount to approximately 2,000 per year.

Question: In addition, EPA continues to give low priority to helping States identify potential sites. Given the large discrepancy between the EPA and GAO figures, why is EPA not giving a higher priority to developing guidelines and uniform standards for states to identify potential hazardous waste sites?

Answer: EPA conducted a study in 1986 to assess the effectiveness of various site discovery approaches that have been employed by EPA since 1980. This study evaluated financial and administrative elements and the effectiveness of various site discovery mechanisms. The study concluded that low cost mechanisms are the most cost-effective means of bringing potential Superfund sites to the attention of the Agency. EPA is currently developing guidance on these various discovery mechanisms for States to use as they deem appropriate.

Question: Another problem that the GAO found was that EPA has refused in some instances to add sites identified by States to the national inventory. How do you account for EPA's refusal to add sites to the inventory?

Answer: It has recently come to our attention, and confirmed by the GAO report, that two of our ten Regions have been restricting additions to CERCLIS because of funding limitations for conducting Preliminary Assessments. It has always been the Agency position that eligible sites should be entered into CERCLIS as they are discovered by the Region and that fiscal concerns are not an appropriate screening tool for site eligibility. A memo reaffirming this position is in draft and it will be sent to the Regions in late May.

Question: GAO recommended that EPA establish a formal policy on what types of sites and when they should be added to the inventory. Has EPA begun to formulate such a policy?

Answer: Criteria for the discovery of sites and subsequent inclusion in CERCLIS were established in the 1981 Section 103(c) notification guidance (46FR22144). In addition, hazardous waste sites have been reported to EPA through a large variety of channels. These include: State government investigation; selected facility inventories; random Federal, State, and local government agency observation; informal private observation; and reporting of present hazardous waste operations under RCRA. CERCLIS site entry criteria is very broad so as not to omit valid sites. Within the next several months, EPA will reiterate our guidelines on the types of sites that should be added into CERCLIS and when. These guidelines will also be shared with each State. The Regions will be directed to work more closely with each State to see that they are implemented.

STATE AUTHORIZATION UNDER RCRA

Question: You are requesting $262 million for Hazardous Waste activities, an increase of just 1.3 percent over the current budget. Your budget proposal emphasizes the implementation of strong state programs; permitting activities; and enforcement, corrective action and compliance monitoring.

I would like to discuss the delegation of authority to states and then move on to other items I mentioned.

You are requesting $66 million for Hazardous Waste Management Financial Assistance to States, an increase of $1.2 million over the current level.

In 1987 only one state, Georgia, had full authorization for the basic program under the Resource Conservation and Recovery Act (RCRA). You anticipated, Dr. Porter, that 11 states would be delegated that authority by the end of 1987. Has any other state been delegated authority over the past 12 months?

Answer: As of April 15, 1988, 43 States were authorized for the "base" program, that is, the pre-Hazardous and Solid Waste Amendments (HSWA) program; one State (Georgia) for nearly all HSWA authorities; and a number of States for one or more pieces of HSWA (Section 3006(f) availability of information, small quantity generators, dioxin, etc.).

Question: What accounts for the unanticipated delays in delegating authority?

Answer: In response to State concerns that the HSWA authorization process was being delayed, the EPA Regions were polled late last year about the status of HSWA applications and the reasons for any delays encountered. The Regions were asked specifically about applications for HSWA corrective action authority (Sections 3004(u) and (v)) since this is considered the most significant from a workload standpoint.

Bearing in mind that States authorized for the base program are not required to apply for corrective action until 1989 or 1990, the major reasons cited by the Regions for delays in State applications and approvals are:

-inadequate State statutory or regulatory authority for corrective action;

-lack of adequate and trained State staff to handle corrective action workload; and

-State performance problems either in enforcement, permitting or both.

EPA is addressing these problems by:

- holding an authorization workshop for States and EPA Regions in May 1988. EPA is providing $60,000 for State travel to encourage participation in the workshop.

-directing Regions to allocate 5 percent of State grants to training; providing $500,000 to the Association of State and Territorial Solid Waste Management Officials to develop entry level inspection and permit programs for State staff; and ensuring that each State has a designated training coordinator who can provide continuing education for State staff;

-making HSWA authorization one of the highest national priorities for the Regional staff in FY 1989; providing increased Headquarters support in FY 1988 and 1989 to review legal authorities and to identify acceptable State alternatives to Regional procedures; and

-working with State Environmental Commissioners and others on ways to streamline the authorization process.

Question: How many States do you expect to delegate authority to in fiscal years 1988 and 1989?

Answer: To date, six States (Minnesota, Illinois, Colorado, Utah, North Dakota and Idaho) have applied for corrective action authority and two others are expected to do so within a month. The Regions anticipate a total of 13 applications during calendar year 1988 with eight States receiving authorization by early 1989. A total of 27 additional applications are expected in 1989, with nine additional approvals.

HAZARDOUS WASTE FACILITIES

Question: You are requesting a total of $24 million for the hazardous waste management regulatory strategies implementation program, an increase of about 23 percent over the current budget.

An Inspector General's report issued last April revealed that EPA was not adequately managing the permit program under the Resource Conservation and Recovery Act (RCRA). The report indicated that hazardous waste facilities may not receive permits within congressionally mandated timeframes, increasing the risk to human health and the environment.

In last year's House hearing Dr. Porter estimated that all hazardous waste land disposal facilities would be permitted by the 1988 deadline. However, the IG found that after 6 years and $157 million of funding, permits were issued to only 15 percent of RCRA facilities -- an increase of only one percent. Why haven't you been able to do a better job?

Answer: As of April 11, 1988, 40 percent of land disposal facilities subject to the 1988 deadline have had a final permit determination (i.e., a final permit granted or a final permit denial issued). We have seen a steady increase in the rate of permit actions over the last six months indicating strong progress towards the deadline. In addition, many facilities are deciding to close rather than seek an operating permit, thereby decreasing the overall universe. As a result, we believe that we will meet the 1988 deadline. There are a variety of factors that may contribute to the fact that many permit determinations are just now coming out of the pipeline:

-Many owner/operators submitted incomplete or inadequate permit applications. Frequently, several iterations were necessary before a complete application was submitted, resulting in time delays. If deficiencies remain, we are now moving to deny the permit.

-Some facilities have major corrective action problems that must be addressed in the permit. Such permits are necessarily more complex and take longer to issue.

-Citizens' concerns about, or objections to facilities, have sometimes necessitated an expanded public participation process, causing delays in final permit determinations.

-High staff turnover in several States and Regions has resulted in lost time as new staff were being hired and trained.

Question: The GAO report claims that a majority of the land disposal facilities will not meet the 1988 deadline. What percentage of the land disposal facilities do you believe will meet the 1988 deadline and what percentage of the incineration facilities will meet the 1989 deadline?

Answer: Current schedules call for all land disposal facilities to be permitted by the November 1988 deadline. Although unexpected slippages may result, we believe that final determinations will be made for virtually all of land disposal facilities by the 1988 deadline.

It is very early to estimate the incineration accomplishments; however, we have requested the resources we think are necessary to meet the November 1989 permit deadline.

Question: EPA has also had difficulty in meeting post-closure targets. The agency testified before a House subcommittee last December that hundreds of land disposal sites have no approved post-closure plans two years after closure. The regulatory deadline for approval of these post-closure plans is 180 days after closure. Why are you having such pronounced difficulties in meeting deadlines?

Answer: EPA testified on December 15, 1987, before the House Committee on Government Operations, Subcommittee on Environment, Energy, and Natural Resources, concerning the closure of hazardous waste facilities. The Subcommittee was particularly interested in the progress being made on the closing of interim status land disposal facilities. Pursuant to EPA regulations at 40 CFR 265.112, closure plans for interim status facilities are required to be submitted within 180 days of the time the owner or operator expects to begin closure. Under the regulations, closure plan approval is to take place within 180 days after receipt. In authorized States, the State will be approving the closure plans.

The reasons for the delays in closure plan approvals and closure completions are several. First, the number of closing facilities has expanded greatly in the last three years, largely as a result of several requirements of the Hazardous and Solid Waste Amendments (HSWA). The workload resulting from this hugh volume of closing faciltities could not have been anticipated in 1980, when EPA established the timeframes for closure plan approval. Second, addressing this new workload needed to be balanced against other program priorities, particularly the permitting of operating facilities. Third, and perhaps most importantly, the review and approval of closure plans has proven to be a complex and iterative process. Proper closure is an important step towards assuring against future environmental problems. Since the closure plan is the primary tool for ensuring that closure activities are conducted in a manner which will ensure continued protection to human health and the environ-ment, careful review of these plans is essential. This review process frequently involves the revision of closure plans either by the owner/operator and/or by the Agency or State.

In addition, many facilities initially attempt to "clean close" their facilities and later find that they are unable to meet the technical requirements for waste removal and facility decontamination. Because clean closure of a facility relieves the owner or operator of post-closure care requirements, the technical standards to demonstrate clean closure are detailed and rigorous. To assist in the application of these technical closure regulations, EPA will be issuing guidance to assist Regional and State reviewers, as well as owners and operators, in determining at the time of closure plan development whether clean closure can be accomplished at a particular facility. This guidance, combined with any forthcoming alternate closure scheme, should help reduce the number of closure plan iterations or subsequent plan modifications required.

RCRA - ENFORCEMENT

Question: You are requesting $40.8 million for Hazardous Waste Enforcement, an increase of two-and-a-half percent over the current level. Between fiscal years 1986 and 1987 appropriations for Hazardous Waste Enforcement increased 72 percent, yet the number of inspections declined in fiscal year 1987 by 22 percent from the previous year. Can you tell us why funding went up but the number of inspections decreased?

Answer: Between fiscal years 1986 and 1987, the Agency's Hazardous Waste Enforcement budget increased by 22 percent, from $29.3 million total dollars to $36.1 million total dollars. (In addition, a restructuring of the Hazardous Waste Enforcement program officially shifted Headquarters resources into a new enforcement program element). Most of the new resources were in the Regional budget and supported corrective action.

Also between 1986 and 1987, the Regional workyears devoted to Compliance Monitoring and Enforcement, of which inspections are a part, decreased six percent from 197 to 185 workyears, due to further delegation of the base enforcement program to the states. The decrease is more than offset by the 13 percent increase in the State Grant budget for Compliance Monitoring and Enforcement work, from $19.3 million total dollars to $21.9 million total dollars, if EPA and State inspection outputs are combined, inspection outputs increase 13 percent from 1986 to 1987, from 11,360 to 12,867.

Question: A GAO report entitled "Hazardous Waste: Corrective Action Cleanup Will Take Years to Complete" was released in January. It claimed that hazardous waste inspections "are not thorough and complete.

Do you agree with GAO's assertion and if so, what are you doing to improve inspections?

Answer: GAO has prepared several reports on EPA's hazardous waste program. The report entitled Hazardous waste: Corrective Action Cleanups Will Take Years to Complete (GAO/RCED 88- 48) dated December 1987 describes EPA's corrective action program; a GAO report entitled Hazardous Waste: Facility Inspections Are Not Thorough and Complete (GAO/RCED-88-20) also dated December 1987 deals with EPA's hazardous waste facility inspection program.

EPA's response to this latter GAO report is contained in a March 31, 1988 letter to Senator John Glenn from Linda J. Fisher, Assistant Administrator for Policy, Planning and Evaluation, which outlines EPA actions to address GAO's findings and recommendations; it is attached for your information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 31 [illegible]

OFFICE OF
POLICY, PLANNING AND EVALUATION

Honorable John Glenn
Chairman, Committee on Governmental Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On December 18, 1987, the General Accounting Office (GAO) sent the Environmental Protection Agency (EPA) their final report, entitled "Hazardous Waste: Facility Inspections Are Not Thorough And Complete" (GAO/RCED-88-20). Public Law 91-510 requires that the Agency review the report, consider the recommendations, and respond to the report's recommendations which are below.

GAO Recommendation

To improve the quality of inspections at Resource Conservation and Recovery Act (RCRA) facilities, and to ensure that hazardous wastes are being properly controlled and managed, GAO recommends that the Administrator, EPA, ensure that inspection guidance and regulations on how to conduct inspections are issued as scheduled.

EPA Response

The Office of Solid Waste and Emergency Response's RCRA Enforcement Division (RED) already has many guidelines in place and plans to issue additional inspection guidance and regulations. In Fiscal Year 1987, RED issued:

- RCRA Ground Water Monitoring Technical Enforcement Guidance Document (TEGD),
- Waste Oil Interim Enforcement Guidance,
- Land Disposal Restrictions (solvents/dioxins) guidance, and
- Compliance Monitoring Evaluation (CME) Guidance.

In Fiscal Year 1988, RED plans to issue inspection guidance including:

- RCRA Inspection Manual,
- State Oversight Inspection Guidance,
- Operation and Maintenance Manual,
- Lab Audit Manual,
- Technical Case Development Manual, and
- Hazardous Waste Tanks Inspection Manual.

GAO Recommendation

To improve the quality of inspections at Resource Conservation and Recovery Act facilities, and to ensure that hazardous wastes are being properly controlled and managed, GAO recommends that the Administrator, EPA, develop and implement a continuing and mandatory RCRA inspector training program.

EPA Response

The RCRA Enforcement Division has actively participated in the Agencywide Workgroup on Inspection Training and Development in order to prepare a mandatory basic inspector training curriculum.

In this effort, RED has prepared a draft RCRA-specific inspector training strategy, a copy of which is attached. The training requirements contained in the strategy will be implemented in Fiscal Year 1988.

We believe that this proposed inspector training and RCRA policy will provide a strong framework to improve the quality of inspections.

GAO Recommendation

To improve the quality of inspections at Resource Conservation and Recovery Act facilities, and to ensure that hazardous wastes are being properly controlled and managed, GAO recommends that the Administrator, EPA, reinstate the target requirement that the regions annually oversee 10 percent of state RCRA inspections and ensure that state performance in conducting these inspections is addressed in state grant reviews performed by the regional offices.

EPA Response

In order to emphasize the importance of oversight inspections, the Fiscal Year 1989 RCPA Implementation Plan (RIP) reestablishes the requirement that 10 percent of the treatment, storage and/or disposal facilities (TSDF) inspections committed to in the State grant agreements be subject to a Regional oversight inspection. In addition, the RIP notes that regular reviews of inspection reports are part of the grant oversight process. This is in accordance with the enclosed RCRA Inspector Enhancement Strategy which recommends that "(T)he Regions make a concerted effort to ... meet the minimum target of 10% oversight".

GAO Recommendation

To improve the quality of inspections at Resource Conservation and Recovery Act facilities, and to ensure that hazardous wastes are being properly controlled and managed, GAO recommends that the Administrator, EPA, reinstate the requirement that regional oversight of state RCRA inspections be evaluated and reported in headquarters regional program reviews.

EPA Response

The Regions will perform an indepth review of EPA oversight and State inspection reports to insure that hazardous wastes are properly controlled and managed. These reviews will be used in mid-year and end-of-year reviews, at which time the EPA Headquarter's Regional review team will verify that the Regions have procedures in place to provide constructive feedback to inspectors following oversight inspections.

GAO Recommendation

To improve the quality of inspections at Resource Conservation and Recovery Act facilities, and to ensure that hazardous wastes are being properly controlled and managed, GAO recommends that the Administrator, EPA, develop and implement a system to provide routine oversight over EPA regional and EPA contractor inspections, as well as documenting and reporting the results to EPA headquarters.

EPA Response

In Fiscal Year 1988, EPA Headquarters will perform closer oversight of inspections conducted by the Regions and EPA contractors in order to improve the quality of RCRA facility inspections. When necessary, EPA Headquarters may conduct oversight inspections in advance of the Regional reviews.

The Agency believes that RED has drafted guidance to improve inspections and that additional Headquarters oversight will further improve the quality of RCRA inspections.

I appreciate the opportunity to respond to the recommendation presented in this report.

Sincerely,

Linda J. Fisher
Assistant Administrator

Question: Are you anticipating an increase in the number of inspection in 1988 and 1989, and if so, by what percent over the 1987 level.

Answer: The RCRA Enforcement program anticipates meeting the mandated inspection schedules with an essentially straight-line inspection program between 1988 and 1989. This level of inspection represent a three percent decrease from 1987 levels.

Question: The principal finding of the GAO report was that some Resource Conservation and Recovery Act (RCRA) corrective actions are projected to take 20 years to complete. It may take until the year 2005 before some cleanups are even initiated and the job won't be completed until the year 2025. The size and scope of the RCRA corrective action program may be as enormous as that of Superfund, according to GAO.

Do you have any estimates of the total cost of implementing RCRA as well as year by year projections? If so, tell us when the cost burden will be the greatest and provide year by year cost breakout for the record.

Answer: The cleanup program in total will take a long time; however, no individual facility cleanup is projected to take 20 years to complete. The overall cost of $20 billion mentioned in the GAO report assumed the Federal government would undertake a large share of the cleanup efforts. The Agency is anticipating that its RCRA corrective action costs will be primarily oversight costs and thus will be significantly less. The GAO projections assume 10 percent resource increases each year for corrective action as well as numerous program assumptions concerning financial viability of owner/operators, permit appeal rates and implementation time lines. The Agency has not made year-by-year resource projections for the corrective action program for the outyears.

Question: Congressman Florio, who released the January GAO report, stated that one of the reasons for the high cost of RCRA is the absence of RCRA enforcement. RCRA requires safe disposal of toxics as well as proof of operators' financial responsibility. Congressman Florio said "the report says EPA has been stretching our compliance schedules, weakening cleanup standards and allowing sites to be cleaned up with taxpayer money instead of by owners. In short, EPA seems to be bending over backwards to help operators avoid the costs of cleanup." Obviously, we just can't afford this lack of enforcement. What is EPA doing to improve RCRA enforcement?

Answer: EPA has just revised its Enforcement Response Policy (ERP) (December 21, 1987) to urge the Regions to have the States use their own enforcement authorities where cleanup or compliance can be achieved immediately. The flexibility built into the new ERP allows the Regions to directly address through its own enforcement actions, those sites with environmentally significant violations. We believe this will improve the efficiency of the program and best utilize our resources to achieve timely cleanup and compliance.

With respect to corrective action, EPA has established stringent technical and procedural standards for corrective action at RCRA facilities. These procedures are set out in the Corrective Action Plan. In addition, the Corrective Action Plan will set forth the overall tone of the program in corrective action.

The cleanup standards used at RCRA facilities are consistent with the cleanup standards used at Superfund sites. EPA is using the best available technology for conducting facility cleanups. Health-based levels are used because in many cases lower levels (e.g., background) may be technically infeasible to achieve or unjustifiably stringent.

Question: What resources do you plan to devote to corrective action in 1989 and how does that compare to the level of funding?

Answer: From 1988 to 1989, RCRA enforcement is projecting a resource increase in the Regional budget, from 140 workyears and $12.4 million to 145 workyears and $15.5 million. In the State grant budget, corrective action resources are projected to increase from $7.2 million to $10 million.

Question: As you know, the first step in the corrective action process is the RCRA Facility Assessment (RFA), in which you determine if a facility is leaking. When do you expect RFAs to be completed for all RCRA facilities?

Answer: To date, approximately 1,200 RFAs have been performed at land disposal facilities. Of the 1,200 RFAs, the Agency estimates that 900 facilities will need a RCRA Facility Investigation to facilitate corrective action. As a rule, RFAs for treatment and storage facilities will be performed as those facilities go through the permitting process. The permitting deadline for those facilities is November 1992.

A new RCRA site selection process for cleanup has been developed within the Office of Solid Waste and Emergency Response. The Environmental Priorities Initiative identifies those sites having the most pressing environmental problems and sets priorities across the programs to address the worst sites first. The process for identifying sites has already begun.

HAZARDOUS WASTE DATA MANAGEMENT SYSTEM

Question: You have had some problems with RCRA's Hazardous Waste Data Management System (HWDMS). Specific ally, the system was not providing management with an accurate list of hazardous waste facilities that required a permit or an identification of the correct permit status of individual facilities. Apparently the States and Regions were not using the sytsem because they thought it was for Headquarters' use. Last year you testified that you were trying to increase its utility to the regions in order to make the system work better.

I note on page HW-48 of your justifications that you are planning to make a transition from HWDMS to a new system. How is this system an improvement over HWDMS and how much will it cost to implement?

Answer: The Hazardous Waste Data Management System (HWDMS) is currently used by EPA to track the status of facilities regulated under the Resource Conservation and Recovery Act. As a result of a major data clean-up effort by EPA Headquarters and Regional staff, HWDMS now provides management with accurate lists of hazardous waste facilities that have permits, that are in the process of receiving permits, or are closing. In addition to EPA Headquarters and Regional staff, a number of States are also using the HWDMS to help them in managing the RCRA program. However, although the utility of HWDMS has increased greatly over the past year, it still has a number of limitations with regard to the multiple information needs of the increasingly complex RCRA program.

In response to these multiple information needs, EPA is developing the Resource Conservation and Recovery Act Information System (RCRIS). RCRIS is being developed in full cooperation with the States. The system will be piloted in four States in Region IV during 1988. Based on the pilot experience we will be able to develop national implementation costs.

RCRA TRAINING

Question: In fiscal year 1987 $1 million was awarded to the National Environmental Training Association to develop a model RCRA training program for five States, later to be extended to ten additional States. The purpose of this training initiative was to achieve compliance with RCRA requirement.

The Association was to make State Training Action Plan (STAP) grants to 5 model States by June of 1987 and 10 additional States by December 1987.

Has this timetable been adhered to? Where is this program today and how would you rate its success?

Answer: The RCRA Integrated Training and Technical Assistance Program (RITTA) is on schedule relative to the timetable established in the Interim Report to Congress, forwarded to you and Congressman Boland in June 1987. State response has been very strong and positive with thirty-eight States formally indicating their intention to participate in the project. Under separate cover, we are providing you with a complete package of information on the program.

GAO REPORT ON OVERSIGHT OF PRPs

Question: A May 1986 GAO report entitled "Hazardous Waste: Responsible Party Clean Up Efforts Require Improved Oversight" found that no formal guidelines exist for project managers to oversee settlement activities and enforce deadlines, causing delays in identifying and resolving problems.

I understand that EPA is taking steps to improve responsible party oversight by issuing new guidance, and that a comprehensive oversight guidance manual was to be developed this month. Has this guidance been issued?

Answer: Guidance on potentially responsible party (PRP) participation in remedial investigations and feasibility studies (RI/FS) has been developed and will be forwarded to the Assistant Administrator for his signature this month. This guidance defines enforcement-specific procedures for conducting oversight of PRP activities. A comprehensive oversight guidance manual that expands on the oversight principles described in this guidance is currently being developed and has not yet been issued.

Question: The GAO report found that the long-term site cleanup work was valued at $417 million. Can you quantify the savings that will arise as a result of oversight improvements?

Answer: Effective oversight of PRP activities will ensure effective site cleanup as well as reduce the time and cost needed to accomplish such cleanup. The savings that will arise as a result of oversight improvements cannot, however, be quantified without doing a study of all settlement cases, followed by an application of this information to future site cleanups.

LEAKING UNDERGROUND STORAGE TANK TRUST FUND

Question: You are requesting $50 million for the Leaking Underground Storage Tank Trust Fund, an increase of $10.6 million over the current budget, primarily for expanded funding of State cooperative agreements, for which you plan to spend $40.5 million, an increase of 33 percent.

Your justifications state that "most" States have cooperative agreements in place. How many States are we talking about?

Answer: There have been 43 States, 3 territories and 2 site specific cooperative agreements signed to date.

Question: When do you expect the remaining States to sign cooperative agreements?

Answer: States and territories with cooperative agreements in progress are as follows:

The award offer was made to Pennsylvania by the Region last fall. The State has not signed the agreement pending resolution of some cost recovery issues. We expect resolution by summer.

North Dakota is in the process of integrating Region VIII's comments into their final cooperative agreement. Some internal problems have delayed signing, but these problems are expected to be resolved in the near future.

Hawaii's cooperative agreement is in draft form. However, due to staffing shortages, Hawaii has not been able to finalize the draft agreement.

Washinton recently submitted a final agreement application. The Region expects to make an award offer in a few weeks.

The District of Columbia is finalizing their cooperative agreement and are incorporating Region III's comments to a draft submitted in December 1987. The Region anticipates a signed cooperative agreement by the end of April.

The Virgin Islands is finalizing its cooperative agreement. Regional comments have been incorporated into the draft. The final draft is now in the Virgin Islands awaiting signature.

Puerto Rico has a draft cooperative agreement, problems with their accounting system have held up the award.
States not currently participating are:

Florida is not interested in participating in the national LUST Trust Fund program at this time. The State has its own Trust Fund program and EPA funds would only provide a modest supplement to it. The State also has an amnesty program that relieves owners and operators of liability for corrective action costs if the release is reported within a specified period of time. It is possible, if Florida would decide to participate, that their amnesty program could conflict with EPA's cost recovery policy.

Georgia is not interested in participating in the national LUST Trust Fund program at this time. The Region is currently negotiating with the State. However, state legislation to address underground storage tanks is likely to be approved this month.

The Arkansas Department of Pollution Control and Ecology (PCE) will not draft a cooperative agreement until internal state policy decisions are made. The Governor and Director of PCE are to meet to discuss program implementation. The date has not been set when this meeting will take place.

Question: How many responsible party clean ups have been made under the LUST program to date?

Answer: Clean-ups initiated under cooperative agreements are categorized by source of funds:

	State	RP	TF	Tot		State	RP	TF	Tot
CT	368	366	0	734	WI	0	77	0	77
MA	452	0	0	452	AR	0	0	0	0
ME	34	46	0	80	LA	0	5	0	5
NH	3	39	0	42	NM	1	30	3	34
RI	0	35	0	35	OK	0	0	0	0
VT	6	212	0	218	TX	0	336	0	336
NJ	0	0	0	0	PA	0	0	0	0
NY	18	715	13	746	KS	0	12	0	12
PR	0	2	0	2	MO	0	4	0	4
VI	0	2	0	2	NE	0	16	0	16
DE	7	9	1	17	CO	0	29	0	29
DC	0	0	0	0	MT	0	0	1	1
MD	4	6	0	10	ND	0	2	0	2
PA	0	0	0	0	SD	0	17	0	17
VA	0	47	0	47	UT	0	7	1	8
WV	0	15	0	15	WY	0	42	0	42
AL	0	2	0	2	AS	0	0	0	0
FL	0	325	0	325	AZ	0	65	0	65
GA	0	0	0	0	CA	0	120	0	120
KY	0	42	0	42	CN	0	0	0	0
NC	0	62	0	62	GU	0	0	0	0
SC	0	22	0	22	HI	0	0	0	0
TN	0	31	0	31	NV	0	7	0	0
IL	0	135	0	135	MS	0	1	0	1
IN	0	216	2	216	AK	0	5	19	24
MI	0	250	11	266	ID	0	3	1	4
MN	0	252	10	262	OR	0	21	0	21
OH	0	82	0	82	WA	0	0	0	0
				Grand Totals		893	3,712	62	4,667

RP - Responsible Party
TF - Federal Trust Fund

Source of Information: State-reported data from 2nd Quarter, FY 1988. Raw data report - data will be refined as definitions and time frames are clarified.

LUST - INSURING UNDERGROUND PETROLEUM TANKS

Question: Hundreds of thousands of underground petroleum storage tanks have corroded and are leaking in this country. To insure that the owners of tanks have the financial ability to pay for damages resulting from tank leaks, Congress mandated in 1986 that they carry insurance or use other methods to demonstrate financial responsibility. The availability of insurance is limited at present due to the perceived risks associated with the tanks and demonstrating financial responsibility is expected to cause serious difficulty for thousands of underground tank owners. At this point thousands of tank owners may be unable to obtain insurance.

GAO has recommended that EPA change its timetables for implementing proposed regulations covering (1) financial responsibility, and (2) tank upgrading and replacement, in view of the insurance problem. Does the agency have plans to do so?

Answer: We have reviewed the GAO Final Report, and our response to its recommendations (stated on page 64) are as follows:

1. Set realistic schedule for implementation of financial responsibility requirements.

We have been reviewing a number of options since we proposed the rule in April 1987. These options range from a flat time-delay for all parties to a phase-in approach whereby certain groups have to come into compliance at various times after publication of the final rule. We have discussed these ideas with all levels of OSWER and EPA management. We have also discussed these ideas with Congressional staff.

2. Modify the timetable for tank upgrade and replacement.

EPA has considered this recommendation along with similar public comments in developing the final technical standards. Given the enormous size of the existing UST system universe and the practical implementation difficulties that owners and operators face as they make necessary improvements to prevent future releases, EPA believes that shortening the phase-in period (which is GAO's recommendation) is not practical or feasible. We also believe that shortening the phase-in schedule for tank upgrading and replacement will not increase the availability of insurance.

CONSTRUCTION GRANTS

Question: Now I would like to get into one of the more controversial items in your budget -- wastewater treatment construction grants. You are requesting $1.5 billion, a cut of 35 percent below your 1988 appropriation. The request is divided equally between construction grants and State revolving funds.

What was your initial request to OMB for construction grants?

Answer: Our initial request to OMB for construction grants was $1.9 billion.

Question: In 1988 you plan to make 626 grant awards and will have a total active workload of 5,563 construction grant projects. You are estimating only 246 grant awards for 1989 and 4,700 construction grant projects.

If the Congress appropriated your initial request of $1.9 billion, how many more grant awards would you be able to make and how would your active workload of construction grant projects be affected?

Answer: Assuming the same 50-50 split of appropriation between Titles II & VI, the additional $200 million could result in approximately 111 additional grant awards and the active workload of construction grant projects could be increased to a total of 4,770 by the end of FY 1989.

Question: You are estimating that 12 State revolving fund programs will be approved in 1988. How many States have signed revolving fund cooperative agreements to date?

Answer: To date, two States have signed capitalization grant award agreements. Texas received a SRF grant for $105.2 million from its FY 1987 and FY 1988 allotments. Tennessee received a SRF grant for $8.3 million from its FY 1987 allotment. It is expected that Tennessee will apply for and receive an additional SRF grant from its FY 1988 allotment prior to the end of this fiscal year.

Question: Which states are expected to make applications in 1988 and 1989, and why are some States not expected to submit grant applications until after 1989?

Answer: In addition to Texas and Tennessee discussed above, nine other States are expected to apply for capitalization grant awards by the end of FY 1988. The nine States are: Connecticut, New Jersey, Virginia, Georgia, Kentucky, New Mexico, Utah, Louisiana, and Alaska.

It is projected that during 1989 all remaining States will submit applications and receive a capitalization grant award, although at this time Delaware and Wyoming are not sure if a sufficient need exists to establish a State Revolving Fund. The Virgin Islands, Pacific Trust Territories, the Northern Marianas, Guam and Samoa are currently being assessed to determine if Title VI should be implemented.

Question: I understand the payment of grants under the letter-of-credit approach may affect adversely the tax exempt status of bonds issued for revolving fund purposes. Administrator Thomas, in your hearings with the House last month you said that you were working on this issue. Can you give us an update?

Answer: The Internal Revenue Service (IRS) is responsible for determining whether the use of the letter-of-credit to secure bonds issued for State Revolving Fund (SRF) programs constitutes a Federal guarantee. Under current tax law a bond with a direct or indirect Federal guarantee is taxable.

On April 21, 1988 the IRS issued Notice 88-54 which states that the EPA letter-of-credits are not Federal guarantees within the meaning of the tax laws and do not affect the tax-exempt status of State and local bonds issued under SRFs. The Notice states that "payments of principal and interest on State and local bonds will not be considered Federally guaranteed ...

solely by reason of the fact that the debt service reserve fund for the bonds (or principal or interest on the bonds) may be funded with capitalization grants awarded under the Program in accordance with procedures outlined in the EPA guidance".

Therefore, debt secured by an SRF using its letter-of-credit will not in-and-of itself cause the debt issue to lose its tax-exempt status. This determination will enable SRFs to provide a long-term source of low cost financing for water quality protection projects.

CONSTRUCTION GRANTS - VALUE ENGINEERING

Question: In a 1985 report entitled "Greater Use of Value Engineering Has the Potential to Save Millions on Wastewater Treatment Projects," the GAO concluded that the construction grants program could potentially achieve annual cost savings of $25 million to $57 million by using value engineering studies on projects costing from $1 million to $10 million. These value engineering studies are currently required on designs of projects costing more than $10 million. How much would you estimate the agency saves each year through value engineering studies conducted on projects costing more than $10 million?

Answer: The Agency saves about $100 million annually through value engineering studies conducted on projects costing $10 million or more. We estimate that an additional $30 million could be saved by requiring value engineering studies on projects costing between $5 million and $10 million, and that an additional $10 million could be saved by requiring value engineering studies on projects costing between $1 million and $5 million.

Question: In view of the fact that substantial savings could result, why has the agency declined to make value engineering studies a requirement for projects costing from $1 million to $10 million?

Answer: We do not require value engineering (VE) studies on these smaller projects because the Clean Water Act only requires VE studies for projects costing $10 million or more. Nevertheless, EPA does encourage the States to conduct value engineering studies on these smaller projects. Given the phase-down on the grant program and the shift of emphasis in the State programs, we do not feel that EPA should attempt to mandate additional grant program requirements.

CLEAN WATER PROGRAM

Question: An unpublished EPA report alleged that the Clean Water program is plagued by a lack of coordination among its program offices, each with its own priority toxic chemicals. The report went on to indicate that this lack of coordination has resulted in widely varied testing procedures, duplicated efforts, increased monitoring costs and little quality assurance. Do you agree with these assertions?

Answer: We do not agree with these "assertions". The Agency, through its program offices, has a range of widely differing regulatory responsibilities. The specific act or section of an act may prescribe selected controlled chemicals, classes of chemicals, or a range of criteria for control or assessment. The basis for chemical selection, required quality assurance/ quality control, monitoring system design, analytic method requirements, etc., must be designed to meet the specific regulatory need. At the same time, internal work groups form across program office lines to ensure practical coordination of chemicals, review of available methods, etc.

There are undoubtedly areas of possible improvement. The most useful, however, may be coordination during formulation of the original Act or its revision with other Acts.

Question: The report recommended that EPA establish an interoffice group to coordinate a common list of toxic chemicals of concern to all Agency programs. This seems to be right in line with the cross-media approach the draft GAO management report emphasizes. Are plans being made to set up such a group?

Answer: At the same time the unpublished and GAO reports were being prepared, an Agency task group on analytic methods was studying the same problem. The unpublished report reconfirmed the recommendation developed by the Agency task group. As a result of the Agency task group recommendation, plans were underway to establish functions and guidelines in order to establish an interoffice group to coordinate a common list of toxic chemicals. These plans have been temporarily placed on hold.

Question: [If so] When will such an interoffice group be established?

Answer: Establishment of an interoffice group will be conditional on an evaluation of the recommendations made in the finalized "unpublished" report, the GAO and the Agency task group reports.

Question: The report noted that new testing methods have not been developed to support current programs, and recommended EPA establish a group to coordinate efforts to satisfy this need. Does EPA plan to establish such a group and/or improve testing methods?

Answer: Testing methods for current programs are developed and adapted as required and in conformance with regulatory requirements. Groups such as the biological monitoring work group are formed to analyze needs and facilitate development as the need arises.

WATER QUALITY ENFORCEMENT

Question: You are requesting $20.4 million for water quality enforcement in 1989, an increase of about $1 million over your current budget.

I note on page WQ-8 of your justifications that the numbers of inspections will decrease by 200 or 9.5 percent, administrative orders will decrease by 158 or 46 percent, and civil litigations will decrease by 24 or 18 percent.

Can you tell me why enforcement actions in these areas are projected to decrease so dramatically despite a modest increase in your enforcement budget?

Answer: The increase of $1 million for Salaries and Expenses provides for no increase in workyears over FY 1988. This increase will be used to fully cover actual costs for personnel at the requested level.

The decrease in the number of inspections reflects EPA's decision to conduct fewer, but more resource intensive inspections at constant level of staffing resources. Specifically, EPA plans to conduct more sampling and biomonitoring inspections to support the emphasis on toxics control. These resource intensive actions will result in a smaller total number of inspections.

While the number of referrals and administrative orders drop, the number of administrative penalty orders for 1989 increases by 132 or 83.5 percent. Given the program's constant staffing level, the increase in penalty orders is possible only with a reduction in the issuance of referrals and administrative orders. The resource cost of issuing a penalty order is approximately twice that of issuing a compliance order. This shift in resources is made possible by a reduction in the need to handle referral cases in FY 1989 as a result of progress made in implementing the National Municipal Policy.

Question: On page WQ-65 I note that you plan to take action against approximately 100 major facilities which failed to comply with schedules. How many settlements do you plan to make in fiscal years 1988 and 1989 and how much do you anticipate collecting as a result of these settlements?

Answer: It is our objective to settle a case within two years of the time it is referred. It is our experience that most of the cases will be resolved by a consent decree and not require trial. Many of these consent decree settlements are developed within a year. However, some cases have very complex issues or multiple parties involved and thus take longer to resolve.

The question of anticipated penalties is impossible to predict since penalties are developed on a case specific basis consistent with the Agency's penalty policy. The Policy uses an algorithm that considers the factors of economic benefit, gravity of the violation, recalcitrance, ability to pay, and litigation considerations to develop a settlement penalty. Historically, the use of this policy has produced the following average penalties per case:

	Municipal	Industrial
FY 1986	$90,696	$149,768
FY 1987	$87,665	$127,778

Question: An article appearing in a recent edition of Amicus Journal stated that "Despite EPA's assurances to the contrary ... violations [of the Clean Water Act] are widespread and enforcement is lax nationwide. The U.S. General Accounting Office claimed that 3,400 (about half) of the nation's major plants had broken the law for at least six months of the previous year. One-quarter of them (1,760) had been dumping 50 percent more toxins than they were allowed for four months or longer."

How do you respond to this charge?

Answer: We do not believe that GAO, in their 1983 report to the Administrator of EPA, "Wastewater Dischargers Are Not Complying with EPA Pollution Control Permits", used the same method to track compliance that EPA has been using since FY 1984. In FY 1984, compliance managers in the Regions and States identified a consensus set of report criteria for tracking and acting upon priority violations. This set of criteria was reviewed and approved by the Compliance Task Force of the Association of State and Interstate Water Pollution Control Administrators. Violations meeting these criteria are called Significant Noncompliance (SNC). We have been using SNC since FY 1984 to report priority violations within EPA's management accountability system.

During FY 1987, only 8 to 12 percent of major facilities (industrial, municipal, and Federal) were in significant noncompliance for any one quarter. Of the facilities appearing in significant noncompliance for the first time during a given quarter, 76 percent were returned to compliance or were placed under a formal enforcement action prior to appearing in significant noncompliance for the following quarter. In addition, there were 2,678 Administrative Orders issued and 295 civil referrals filed against violators of the Clean Water Act during FY 1987.

Question: The article (Amicus Journal) also states that EPA's fines dropped from an average of $125,000 in 1979 to only $23,000 in 1985. Can you tell us why?

Answer: We do not know the source of the data in the Amicus Journal article, but it does not correspond to the Agency' s data. We have recently completed a review of all penalty data back to 1977, in addition to reviewing data on most consent decrees. The average penalty for all Clean Water Act cases in 1979 was $31,200, and in 1985 the average was $75,500. The highest average penalty year to date was 1987, when the average penalty for all cases was $95,500.

NONPOINT SOURCE POLLUTION

Question: You are requesting $5.7 million for Water Quality Management, an increase of about $1.2 million, primarily to address increased nonpoint source control activities.

Your 1986 National Water Quality Inventory Report to the Congress states that nonpoint source pollution is a special concern to 16 States. Several States recommended the development of comprehensive management strategies for the control of nonpoint sources. Does your 1989 budget include funds for this purpose?

Answer: Yes, EPA's 1989 budget includes an increase of $1 million in extramural funds for nonpoint source (NPS) management. These funds will be used primarily for technical support and assistance to States for strengthening and initiating implementation of their NPS Management Programs.

Question: On a number of occasions, EPA has pointed to moneys in state revolving funds as being available for certain types of water quality projects, including nonpoint source pollution control. However, in the state revolving fund guidance documents, the Agency has greatly restricted first use of these moneys to projects needed for compliance with the enforceable requirements of the Act. Because of those restrictions, some believe it unlikely that State revolving fund moneys will be available in the near future - if ever - for nonpoint source projects. Do you agree?

Answer: The practical availability of State revolving fund moneys for nonpoint source (NPS) projects will vary widely due to differing municipal compliance needs. The State revolving fund guidance provides for first use of revolving fund moneys for compliance with the enforceable requirements of the Clean Water Act (CWA), but only to the extent required by the CWA, as amended by the Water Quality Act of 1987.

Because municipal compliance needs vary widely by State, there will be differences in the practical availability of State revolving fund moneys. However, the Agency expects that some States will use some of their initial revolving fund moneys for NPS management activities, and that such uses will increase over time.

Question: Would shifting Construction Grants program funds to controlling nonpoint sources of water pollution improve the overall quality of our waters?

Answer: Shifting Construction Grants program funds to controlling nonpoint sources would improve overall water quality in some areas, but in other areas this may not be a good strategy. EPA believes that States should have the flexibility to effect such shifts in funds where water quality assessment analyses indicate the shifts are likely to result in greater water quality improvement. This flexibility was provided by the Water Quality Act of 1987, which added subsection 201(g)(1)(B). This subsection makes projects contained in approved State Nonpoint Source (NPS) Management Programs eligible for funding under the 20 percent discretionary portion of each State's annual Construction Grant allotment.

Question: A 1986 GAO report entitled "Key Unanswered Questions About the Quality of Rivers and Streams" pointed out that a variety of pollution sources have lowered the quality of the nation's rivers despite the Construction Grants program, but the relative contribution of these pollution sources is not known with any degree of certainty. GAO recommended that the agency conduct research comparing the cost-effectiveness of the Construction Grants program with other abatement approaches. Have you seriously considered implementing this recommendation?

Answer: Modifications to the Construction Grants program made by the Water Quality Act of 1987 (specifically the provisions of subsection 201(g)(1)(B) making nonpoint source projects eligible for funding under the 20 percent discretionary portion of each State's annual Construction Grant allotment) have provided the States with greater flexibility to address a broader range of pollution sources. In addition, the State Revolving Fund may also be used for nonpoint source implementation and for estuaries. It would be very costly to conduct comprehensive research comparing the cost-effectiveness of the Construction Grants program with other abatement approaches. Studies done in site-specific areas, such as Chesapeake Bay, confirm the need to control both point and nonpoint sources.

GROUND-WATER STANDARDS

Question: Because a federal program to establish ground-water standards does not exist, States often lack adequate information on ground-water contaminants. In a recently released GAO report on ground-water standards, GAO claimed that EPA needed to improve its ability to provide information to the States for setting ground-water standards.

GAO recommended that EPA establish a criteria document program -- a single, centralized reference source for ground-water contaminants. Although EPA agreed that it should improve its ability to provide information to the States, it did not agree that it should develop a criteria document program due to the time and resources that would be required.

What are you doing to improve your ability to provide information on ground-water contaminants to the States?

Answer: As stated in its response to the GAO report, EPA believes that formal criteria documents are not the appropriate mechanism for providing States with information on ground-water contaminants. A primary reason is that the development of criteria documents for all of the topics identified in the GAO list of information needs would involve substantial new data collection and analysis, and in many cases, years of basic research. Moreover, the issuance of such documents is a time consuming process and it has been our experience that the information provided in the documents can be outdated before any document is published. In addition, criteria documents would constitute Federal regulation of ground-water standard settings which is inconsistent with EPA's role in ground-water protection efforts.

Consequently, the Agency prefers a less formal approach which will consolidate existing information within EPA on health effects and environmental fate of specific substances. This approach will meet the same need but avoid the time-consuming and resource-intensive nature of a formal criteria-setting process.

As a first step toward implementing this approach, the Agency is moving forward with a computer-based system. The system is known as the Integrated Risk Information System (IRIS) and will provide important risk information in a consolidated fashion readily accessible to States. Indeed, IRIS is a compendium of the most current health data on carcinogens and the threshold values of certain toxicants. Further, IRIS includes Drinking Water Health Advisories and data on Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs).

Question: How much would it cost to develop and implement a criteria document program?

Answer: It is difficult to provide an accurate estimate of the costs to develop and implement a criteria document program for ground water. However, for comparison, the cost of preparing a criteria document for surface water ranges from some $10,000 when all the information is readily available to over $100,000 when information must be compiled and analyzed. Even though scientific knowledge of ground-water contamination is steadily advancing, there are many gaps in our knowledge about the occurrence, behavior and treatability of specific substances in ground water. Thus, if ground-water criteria documents were developed for all the topics suggested in the GAO report, substantial activity in data collection and analysis and, in many cases, years of basic research would be required. Consequently, the cost could be much greater than the upper range provided above for surface water criteria documents.

DRINKING WATER STATE GRANTS

Question: Grants for public drinking water systems will remain at fiscal year 1988 levels -- $33.5 million -- while underground injection control grants will decline $2 million to $9 million. Are these funds adequate for the States to meet the program goals and comply with new regulatory requirements?

Answer: In the coming years, the Agency recognizes that the costs of implementing the statutory requirements under the Safe Drinking Water Act will increase substantially. However, because the majority of new regulations will not take effect until FY 1990, the current grant request is sufficient to assist the States in preparing for the implementation of new requirements and concurrently maintain existing regulatory operations for the public water system programs. The Agency is directing a considerable effort to mobilize constituent support for needed water supply system improvements. The funding level for underground injection control grants in FY 1988 reflects a $2.0 million Congressional add-on which was issued as one-time assistance and specifically targeted to reduce State backlogs of Class II well permits, record reviews, and other related activities.

Question: Are States legislating revenue-raising measures to supplement current funding?

Answer: In recognition of the additional responsibilities that the new regulations will require of States, many States already have developed -- or are in the process of developing -- revenue-generating programs. The Agency has developed planning efforts and an implementation strategy to help States identify funding sources and consider the feasibility of new revenue generating activities. Where possible, the Agency will attempt to build flexibility into regulations to minimize costs to States and public water systems, without jeopardizing the protection of human health. In addition, the Agency will work with the States to consider resource alternatives which would supplement costs that the new regulations impose. Among these are consideration of user fees or creative financing mechanisms, shifting existing resources from other programs to fund drinking water programs, and consideration of making State drinking water priorities more consistent with National standards.

PESTICIDES FUNDING LEVELS

Question: You are requesting a total of $137.4 million for pesticides, an increase of $53.2 million primarily for the disposal of cancelled and suspended pesticides.

A recent edition of the Hartford Courant contains an article which states that recent decisions concerning pesticides illustrate that EPA is lax in its pesticides program. Here is a quote from Richard Wiles, principal author of a National Academy of Sciences study on pesticide residues in food: "If anything, [EPA is] establishing a good, consistent patern of not doing anything ...They're just maintaining the exposure level to toxics."

Mr. Moore, you were quoted in that article as saying "the special review process isn't serving EPA or the public well." The article goes on to say "The agency usually requires three years or more to assess a chemical in special review, and then can spend two years or more defending its decision in administrative hearings."

An example the article cites is the alachlor decision. Alachlor was the subject of a three-year EPA special review, which concluded that alachlor is a possible human carcinogen, yet EPA has allowed continued use of this pesticide.

I don't want to get into the specifics of that decision, but I would like you to speak to the criticisms made in the article. Mr. Moore?

Answer: I believe some procedures related to the Special Review process are not serving EPA or the public well because of the burdensome requirements imposed by FIFRA for conducting Special Reviews. The process is intended to provide a timely review of chemicals which may pose unreasonable adverse effects. There is no reason why the review should take more than one to two years, including public participation.

I have control over the pre-regulatory decision part of the process, and there has been considerable improvement over the last several years in the length of time this part of the process takes. Four years ago the average length of a Special Review was three to four years. Over the last few years, several chemicals have completed the process more quickly. For example, the dicofol Special Review lasted two years, and the diazinon Special Review was completed in ten months. The tributyltin Special Review is due to be completed this summer, which is two and a half years from when it was initiated. Alachlor was completed in slightly less than three years.

However, I do not have control over the administrative hearing process which registrants may initiate after the public, regulatory process is completed. As FIFRA is written, unless the Agnecy declares an imminent hazard, implementation of the final decision is delayed until the hearing process is completed. Diazinon is a case in point. Even though the regulatory portion of the process took only ten months, the hearing process took an additional eighteen months--and that involved an expedited hearing. Thus, implementation of the Agency's decision was delayed one and a half years from when it should have taken effect.

PESTICIDES ACTIVE INGREDIENT REVIEWS

Question: After 16 years, EPA has completed only 2 final reviews of the 600-700 commercially important active ingredients used in pesticide formulations. Even though 10 are planned in 1988, and 12 more in 1989, the pace is very slow. In fiscal year 1985, $24.3 million was allocated for the pesticide program. In fiscal year 1989 the amount requested is $25.8 million. As reported by the General Accounting Office, if the program continues to be funded at this level, the review of pesticides started after the 1972 amendments will not be completed until the year 2024 (52 years later). What are the implications of such a delay and what can EPA do to accelerate the review process?

Answer: The implication of this delay is that some hazards from pesticides will go unrecognized for a substantial period of time. We are taking steps to minimize this effect. The initial standards are compiled and published in accordance with a cluster ranking system which ordered Registration Standard cases so that food use chemicals and chemicals with the greatest volume of use would be reviewed early in the program. In fact, the Agency has now completed over 175 initial Registration Standards which cover over 85% of the total weight of pesticides used annually. We have also established flagging criteria for new studies conducted to support chemicals which are in the reregistration porocess, so that those studies indicating potential hazard are diverted to our science brances for immediate review.

PESTICIDE REGISTRATION FEES

Question: What are the timeframes for initiating fee collection for each of the following registration activities?

- registration of new chemicals
- registration of new uses of existing chemicals
- reregistration
- emergency exemptions
- experimental use permits
- state and special local needs

Answer: The Agency anticipates publishing a rule in the Federal Register in late spring of this year that would charge fees for registration of new chemicals and new biochemicals/microbials, new use patterns of existing chemicals, experimental use permits, old chemicals and amendments. Actual fee collections will begin 30 days after the date of publication. No fees are to be collected under this rule for emergency exemptions or State and special local needs. A food additive petition fee will be published in a future rule.

The Agency is not proposing to levy any fees associated with post-registration (reregistration) activities in this rule, but plans to propose such fees in the near future unless a FIFRA reauthorization bill containing such a provision is enacted.

Question: How much do you expect to generate in fees from these various sources in fiscal years 1988 and 1989?

Answer: Registration fees are expected to generate $4-$5 million in fiscal year 1988, assuming fee collections begin in late spring or early summer. The fees are expected to generate approximately $14 million in fiscal year 1989. No estimates are yet available for postregistration (reregistration) fees.

Question: Will registration fees be deposited to the general Treasury?

Answer: Registration fees collected in 1988 will be deposited to a special fund authorized by Public Law 100-202, which provided for EPA appropriations for fiscal year 1988. The Act contained a provision authorizing EPA, in 1988, to assess and collect fees (including registration fees) and to deposit an amount not to exceed $25 million into a special fund which shall be available for appropriation, and remain available until expended. The 1989 President's Budget proposes that fees collected in 1989 again be deposited in the special fund and that revenues in the fund, to the extent they are available, be appropriated as part of the Agency's total appropriation.

Question: Are you considering the assessment of fees for any additional sources?

Answer: The Agency is considering establishing fees for post-registration activities unless a FIFRA reauthorizaton bill containing such a provision is enacted. The Agency is also considering charging fees for reviewing petitions for food additive tolerances estalished under section 409 of the Federal Food, Drug, and Cosmetic Act (FFDCA). Section 408 of FFDCA authorizes fees for reviewing petitions for tolerances in or on raw agricultural products. No similar authority is contained in section 409.

PCB DISPOSAL PROGRAM

Question: You are requesting $95 million for the toxic substances program in fiscal year 1989, a 27 percent decrease primarily attributable to the elimination of funding for asbestos abatement activities.

On page TS-3 of your justification, you indicate that one of your toxic substances objectives is to improve the PCB disposal program. What specific improvements are proposed and how much will they cost?

Answer: The improvements to the PCB disposal program began in FY 1988 in response to Congressional concern about EPA's management of PCB disposal. In FY 1989, EPA expects to complete many of the activities initiated in FY 1988 to improve EPA's PCB disposal program. There are two basic types of activities underway: regulatory/programmatic improvements and improvements to EPA's PCB enforcement program.

Regulatory/Programmatic Improvements

In early FY 1989, EPA expects to issue a final rule that requires: (1) the manifesting of PCB waste, (2) notification to EPA by all generator-storers, transporters, and handlers of PCB waste, (3) assignment of identification numbers by EPA, and (4) EPA approval in order to store PCB waste on a commercial basis.

Once the final regulation is issued, EPA will be required to collect and maintain notification information, issue identification numbers, and review applications to commercially store PCBs.

In mid-FY 1989, EPA expects to issue a final rule that will establish procedures and criteria for revoking PCB disposal and storage permits. Once the final rule is issued, EPA expects to use permit revocation as an enforcement mechanism to reduce the likelihood of Superfund sites at EPA-permitted storage and disposal facilities.

In mid-FY 1989, EPA expects to make a decision on the need for additional controls on the scrapping and salvaging of PCB contaminated electrical equipment. Several scrap and salvage yards have become Superfund sites and EPA is in the process of evaluating the significance of this nationwide.

Throughout FY 1989, EPA expects to devote resources to program oversight of Regional permitting operations. EPA Headquarters will maintain a data base of information on PCB disposal permitting activities and conduct periodic audits of Regional permitting activities.

Resource Requirements for Rulemaking and Implementation

EPA has included a total of 19 FTEs and $550,000 extramural under the risk management program in the Office of Toxic Substances (OTS) for PCB-related activities in FY 1989. The programmatic improvements described above will cost 4-5 FTEs and about $250,000. The remaining resources cover ongoing PCB activities including Headquarters permitting of chemical and biological destruction systems, as well as mobile and stationary incinerators not of a unique design, responding to PCB rule exemption requests, acting as an information clearinghouse, carrying out court litigation, and providing associated technical assistance.

EPA estimates that 5 FTEs (0.5 per regional office) will be needed for PCB storage facility approvals in FY 1989.

Enforcement Improvements

Enforcement program improvements include amending the PCB compliance monitoring strategy to identify PCB disposal sites and storage facilities as high inspection priorities. The amended strategy will specify that each site be inspected periodically (in no case less often than annually), and that such inspections will be more thorough and detailed. The inspections will be designed to detect problems so that they can be corrected before they become serious. The amended strategy will also identify certain categories of inspections and specify the percentage of inspection resources that should be devoted to each. Also, the Agency will identify other parties in PCB disposal activities such as brokers, transporters and intermediate handlers, and target these operations for compliance inspections.

There will be only a slight incremental cost (5 FTE increase over FY 1987) associated with compliance inspection and case development activities related to PCB disposal enforcement. Of more significance, however, is a redirection of resources within the PCB compliance program. That is, the number of inspections conducted at facilities using PCBs will decrease in favor of increased numbers of inspections at storage and disposal sites and related facilities.

Question: Over the next two years, large amounts of PCBs currently in use will be discontinued, thereby creating a heavy disposal workload. Your justifications indicate there will be an emphasis on conducting more frequent and comprehensive inspections at PCB disposal sites, yet the number of PCB inspections will decrease substantially between 1987 and 1989. In 1987, the number of PCB inspections was 2,615 yet you are estimating only 2,150 inspections in fiscal 1989. What is the rationale for the decrease in inspections?

Answer: Inspections at PCB disposal sites have been relatively infrequent through FY 1987. These inspections are complex and time-consuming and, thus, more resource intensive than user inspections. We are increasing the number of labor intensive inspections at PCB disposal sites and decreasing lower-priority, less time-consuming inspections of PCB users, resulting in an overall net decrease to total PCB inspections. However, the higher benefits from the more labor intensive inspections will result in safer PCB disposal in general.

ASBESTOS FUNDING LEVELS

Question: You are currently spending about $40 million on asbestos abatement activities. In an article published in the Omaha World Herald on December 27th, the writer asserted that "EPA has carried its campaign against asbestos to absurd lengths." Further, he states that "the amount of asbestos that the average person inhales is statistically insignificant- the risk of getting lung cancer is 1,000 times greater for a person who smokes one cigarette a day." Do you believe the Agency has been extreme in its treatment of the asbestos problem?

Answer: EPA's asbestos-related activities have been directed primarily by two Congressional mandates. First, the Asbestos School Hazard Abatement Act (ASHAA) of 1984 authorized EPA to provide funding to assist schools in conducting asbestos abatement activities. Since 1985, the Agency has provided over $160 million, appropriated by Congress, to schools throughout the nation to abate the more serious asbestos hazards. At this point, we believe that the previous Federal funding has greatly reduced the need for Federal intervention and that these activities should now be the primary responsibility of State and local governments.

Second, Congress enacted the Asbestos Hazard Emergency Response Act (AHERA) in 1986 and required EPA to promulgate appropriate regulations within one year. In order to help produce a balanced regulation, EPA convened a rulemaking panel to negotiate the provisions of the proposed AHERA regulation. This panel consisted of school administrators, representatives of various education groups, industry, unions, States, contractor organizations and the Federal government. The final regulation issued by EPA had only a few minor changes from the proposed regulation developed by the affected parties.

AHERA also required the Agency to report to Congress on the need for AHERA-type regulations for all public and commercial buildings. The Agency's report to Congress, issued in February 1988, recommended that a Federal regulatory program similar to the AHERA school approach would be inappropriate at this time for public and commercial buildings. Instead, the Agency recommended steps to increase the infrastructure of AHERA-accredited professionals, assist building owners and managers, promote special programs for addressing thermal systm insulation asbestos and prevent imminent hazards due to poorly conducted removal projects. In addition, the EPA recommended an evaluation of the AHERA schools rule program and other research over the next few years before re-evaluating regulations for the public and commercial building sector.

Question: I understand there are three types of asbestos - red and blue, which are highly carcinogenic, and white asbestos, which is far less toxic. Apparently 95 percent of the asbestos used in the U.S. is of the latter variety. It seems to me that it would reduce the concern associated with asbestos if you let the public know what kind of asbestos is present in a buidling. Do you currently do this, and if not, do you have plans to do so?

Answer: EPA has examined the issue of potency of asbestos fiber types (i.e., white, blue and brown asbestos) exhaustively. Several panels of outside experts have also advised the Agency on this issue. In EPA's most recent document on this issue, dated June 1986, and entitled Airborne Asbestos Health Assessment Update, the Agency re-confirmed that "all major asbestos varieties produce lung cancer and mesothelioma with only limited differences in carcinogenic potency." EPA will provide this information to interested parties should they request it. However, the Agency has no plans to dessemlnate the information at this time.

ASBESTOS REMOVAL

Question: A press release issued by the National Institute of Building Sciences (NIBS) in July claimed that total elimination of asbestos in buildings would be prohibitively expensive. There are an estimated 750,000 buildings, in addition to many schools, which have asbestos-containing materials.

The NIBS release states that up to 80 percent of current asbestos abatement projects involve removal of the asbestos. Apparently, this is not always the best method of handling the asbestos problem because removing asbestos-containing material releases dangerous fibers.

If NIBS estimation is true, why isn't EPA promoting the enclosure or encapsulation of asbestos-containing materials instead of allowing schools to remove it in so many instances?

Answer: The Agency believes that each potential asbestos problem must be carefully evaluated on the basis of the conditions present in order to select the appropriate control or abatement strategy. Therefore, EPA does not "promote" the use of one abatement method over others without consideration of the characteristics of the area in question.

Under the 1987 Asbestos Hazard Emergency Response Act (AHERA) regulation, local education agencies (LEAs) may use the least burdensome methods which protect human health and the environment in deciding which of various actions to take to control or eliminate potential asbestos hazards in their schools. Removal is but one of the options. LEAs may also select encapsulation or enclosure in certain circumstances. For all abatement actions, only properly trained and accredited personnel can be used by LEAs.

Unless required for the protection of human health and the environment, asbestos-containing materials (ACM) need not be removed under AHERA. It can remain in place subject to proper surveillance and maintenance until a building is scheduled for major renovation or demolition. At that time, asbestos-containing materials must be removed under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations.

Question: How expensive is removing asbestos material compared to the encapsulation or enclosure methods?

Answer: In the short run, removal is more expensive than enclosure or encapsulation. However, long-run costs associated with asbestos material that has been enclosed or encapsulated could prove substantial. For example, enclosed or encapsulated asbestos material should be subject to an operations and maintenance program, which includes periodic surveillance, worker training and worker protection practices, to keep track of the material's condition. Eventually, as required by EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP), all enclosed or encapsulated asbestos material must be removed prior to building demolition.

ASBESTOS IN SCHOOLS

Question: Although you are not requesting any funds for the asbestos-in schools loans and grants program in next year, you are currently spending $37.6 million on the program.

An Inspector General's report revealed that EPA's procedures for awarding loans and grants under the Asbestos School Hazard Abatement Act (ASHAA) did not ensure that funds were awarded to financially needy schools with the greatest health risks. During fiscal years 1985 and 1986, EPA awarded a total of $11,000,000 (12% of total appropriations for the program) in loans and grants to schools that did not have the most serious abestos problems, while many highly ranked projects went unfunded. Apparently, this problem arose in part because State agencies failed to submit required priority lists. What is the agency doing to ensure that States participating in the asbestos process submit priority lists?

Answer: The Agency has instituted modifications to the procedures for awarding loans and grants under the Asbestos School Hazard Abatement Act (ASHAA) which are responsive to all of the concerns raised by the Inspector General's Office (IGO).

In particular, the IGO raised concerns about the relative sequence in which projects were selected for funding. The IGO report stated that some projects were being funded before higher ranked projects. While OPTS has taken steps to mitigate this, the effect is largely due to the requirements of the funding statute. Typically, the sequence in which projects are selected for funding is determined by a national ranking formula which selects projects for Federal assistance on the basis of the relative conditions of the asbestos-containing materials and the financial need of the school district. However, the statute (section 512 of the ASHAA) required that each State submitting qualified projects receive a share of the total funding. This has meant that some projects in each State, regardless of their relative ranking (so long as they are qualified for funding), may receive assistance before higher ranked projects in other States. Once these minimum awards to each State are distributed, the national ranking controls the sequence in which projects are considered. OPTS has responded to the IGO's concerns and as limited projects eligible for State minimum funding under section 512 to only priority one projects. Therefore, only the highest priority projects are funded under section 512 as part of the annual award cycle.

OPTS has also taken steps to increase State participation in the annual award process. In 1988, state reviewers were given an opportunity to provide input to Agency reviewers on the issue of the relative financial need and hazard ranking of projects reported within their States. The States would be given similar opportunities in any future funding cycle.

Question: The Inspector General also recommended that EPA revise the financial need formula to ensure that funds awarded to local education agencies are commensurate with financial need. Has this been done and if not when will it be?

Answer: The ASHAA financial need formula has been revised in two significant ways in 1988 to respond to the Inspector General's report and to improve the formula's capacity to measure recent economic developments in the school districts.

First, the award formula has been modified to provide greater "breadth" than in previous years. That is, projects within the more affluent school districts will be funded at a smaller percentage of their total abatement costs. As a result, a greater number of projects can be funded, although the level of assistance offered on a project by project basis may be reduced. Second, the award formula now takes into consideration financial data from the 1985 census. Previously, these data were not utilized as they did not reflect information on a school district by school district basis. OPTS staff have devised a way to modify the data in 1988 and make them useful for the ASHAA program.

Question: The fiscal year 1988 appropriations bill directed that awards to schools be made by March 1, 1988, so as to make full use of the summer construction season. I assume all awards have been made in accordance with the statutory requirement. Is that the case?

Answer: The 1988 ASHAA awards were announced on March 1, 1988. Awards were offered totalling $22.6 million to 103 local education agencies (LEAs) for 226 asbestos abatement projects in 187 school buildings.

Question: Can you tell us what your asbestos school hazard backlog is at this point, both in dollar terms and number of applications approved for funding?

Answer: In 1988, the Agency did not solicit new applications from school districts because the Congress placed strict award deadlines which did not permit sufficient time to accept and review new applications. As a result, OPTS relied on unfunded, qualified applications remaining on file from a 1987 solicitation. Of these records, after the March 1, 1988 awards were announced, 495 unfunded, financially qualified, priority 1 and 2 projects remained with a total cost of $53 million. (Only priority one and two projects within financially qualified Local Education Associations (LEAs) receive funding.)

Because a number of the LEAs requested financial assistance for completed abatement work, the number of unfunded projects is not truly indicative of the remaining hazards and should be examined cautiously. In addition, EPA has not had the opportunity to verify, through site inspections, the hazard information contained in the unfunded project applications.

In addition, some of the schools remaining on file have taken, or will take, abatement action regardless of whether they receive Federal funds. To assist them in undertaking necessary abatement activities, the Agency has targeted many of these unfunded schools for technical assistance.

Question: A January 28th article appearing in the Southern Illinoisan claims that the cost of complying with the federal regulations requiring asbestos inspections in public schools is prohibitively high, and, if the inspections reveal a level of asbestos that requires removal, it could cost more to remove the asbestos than it did to build the building, in some instances. How do you respond to this charge?

Answer: The costs of asbestos removal vary significantly across the nation. It is conceivable, but not likely, that asbestos removal costs could exceed the construction costs for a building.

Question: Has the agency provided any cost guidelines for inspection and removal of asbestos in an effort to make sure school districts aren't getting bilked in terms of quality and cost?

Answer: Yes. As part of the preamble to the asbestos in schools regulation issued on October 30, 1987, the Agency provided average cost estimates on a nationwide basis for inspections, management plans, response actions, training and operations and maintenance programs. In addition, schools can receive guidance from their nearest EPA Regional Office concerning relative costs in specific areas of the country.

ASBESTOS ENFORCEMENT

Question: You are requesting $10 million for toxic substances enforcement activities, a 3 percent increase over the current level of funding.

The first of the key Asbestos Hazard Emergency Response Act (AHERA) deadlines is October 12, 1988, when local education agencies are required to have inspected school buildings for asbestos-containing materials and submitted to the state governor a plan for managing such materials. With a large number of public and private elementary and secondary schools subject to the reguations, an enforcement strategy is clearly required. What is the Agency's enforcement strategy and what resources do you plan to allot to these activities?

Answer: The Agency's enforcement strategy is to mount a vigorous inspection program to assure compliance not only by local educational agencies and schools but also on the part of asbestos removal contractors. The specific strategy, which is still under development, will identify as high-priority inspecton targets some combination of the following: the largest LEAs in terms of student population; LEAs found to have violated the 1982 asbestos-in-schools rule; referrals from the Agency's AHERA ombudsman; and tips and complaints originating from other sources. In cases of contractors violating AHERA standards, the strategy would propose that EPA conduct followup inspectons at other sites where that contractor has performed removal work to determine if work done at such other sites was performed properly. EPA will issue civil penalties to LEAs and contractors found in violation of AHERA. As with the asbestos-in-schools program, the Agency has conducted public outreach programs to educate LEAs to AHERA's requirements.

The Agency will allocate 2.7 FTEs and approximately $1.4 million extramural (contractor personnel) to conduct inspections.

Question: What percent of the local education agencies do you expect will meet the October 12th deadlines?

Answer: Although the Agency cannot accurately forecast the percentage of local education agencies (LEAs) that will comply with the October 12, 1988 deadline, EPA expects all LEAs to take steps to meet their responsibilities to conduct AHERA inspections and develop management plans by October 12. To assist schools in meeting the deadline, EPA mailed the regulation to all schools last November and, in February, sent them an "LEA Guide" that explains in straightforward language the provisions of the regulation and what steps LEAs should take to comply. EPA also presented a nationally-broadcasted video teleconference on April 13 to explain to LEAs their responsibilities under AHERA. In the teleconference's interactive format, school officials from across the country could phone in questions on the new schools rule. EPA has also provided since October 1987 over $16 million to States to help schools conduct inspections, and an additional $3 million will be distributed in June.

ASBESTOS FUNDING LEVEL

Question: You are requesting $800,000 for asbestos contractor and inspector certification and training, the same level of support that the program is currently receiving. Dr. Moore stated in last year's House hearing that he thought 10 or 11 states would be assisted with the $800,000 provided in fiscal year 1988.

How many states have been assisted with seed money so far this year and how many states do you expect to assist by the end of the fiscal year?

Answer: EPA is funding a total of 17 States during FY 1988 to help these States develop asbestos inspector training and accreditation programs. EPA has added $300,000 from its overall OPTS budget, so the total amount allocated has been $1.1 million.

Question: How many states will be helped in fiscal 1989?

Answer: EPA plans to provide grant funds to approximately 11 additional States during FY 1989 to help meet AHERA deadlines.

Question: One of the problems associated with asbestos abatement is insufficient numbers of trained people to do the removals. In a March 3rd interview with USA Today, Mr. Elkins, Director of the Office of Toxic Substances, said that the Agency's answer to this problem was to "beef up our enforcement program to catch the people who are having untrained people rip the asbestos out in the dead of night. We are also recommending to Congress that we increase the number of skilled persons who can do this inspection and abatement."

Why, then, does your budget request contain no additional workyears for asbestos enforcement and no change in the abatement, control and compliance portion of the request?

Answer: The budget request calls for conducting over 2,700 asbestos inspections in FY 1989. This is roughly equivalent to the number of asbestos inspections that have been conducted each year since FY 1986. We feel that this number is sufficient to obtain a sense of the overall compliance rate and to serve notice to the regulated community that the Agency is serious in enforcing AHERA and in monitoring local education agency and contractor compliance with the regulations.

Although the workyear and abatement, control and compliance funding levels remain unchanged within the asbestos compliance program budget, the enforcement program emphasizes compliance in asbestos removal projects. In terms of strengthening the Agency's enforcement program to detect violative asbestos removal operations, the AHERA requirement that all asbestos removal operations be performed only by accredited contractors gives EPA an important tool in monitoring removal projects. One focus of EPA's compliance strategy is that if violations are found at a site where a contractor has performed removal work, EPA will conduct additional inspections of the contractor's work at other locations. Where patterns of improper removal operations are found, including using untrained employees or unaccredited contractors, the Agency will pursue particularly stringent enforcement actions.

COMMUNITY RIGHT-TO-KNOW

Question: You are requesting a total of almost $18 million for Title III "Community right-to-know" activities in fiscal year 1989, a decrease of $1 million below the current level.

The "community right-to-know" program was put into effect in part as a reaction to the Bhopal, India disaster several years ago. Title III will require companies to make broad disclosure of significant quantities of hazardous substances they release into the environment.

How effective do you think Title III will be in preventing a disaster similar to the Bhopal disaster?

Answer: The Agency's 1989 request for Title III represents an increase of approximately $4 million over 1988 for EPA's activities since FEMA Training Grants are no longer included in EPA's budget.

Title III itself focuses principally on preparedness, and secondarily, on prevention. The provisions of Title III combine to generate a tremendous flow of information from facilities with hazardous chemicals to planners, emergency responders and the public. The data on routine and accidental releases of hazardous chemicals, on the amounts, locations and hazards of these chemicals, and on the presence of extremely hazardous substances provide the recipient groups with essential knowledge in preparing for chemical accidents. The State emergency response commissions and local emergency planning committees provide the crucial, integrated, local structure for the preparedness process.

Likewise, these data and the State and local network afford a great opportunity for enhancing our ability to prevent chemical accidents. With fuller knowledge of chemical use in the community, members of the State and local committees can work with industry to develop safer chemical process and storage procedures. These people can also implement improved industrial siting practices. Local toxics management activities can be enhanced. So, although Title III's provisions focus chiefly on preparedness, the prevention efforts will be furthered through both the broad disclosure of chemical information and the creation of State and local chemical emergency structures.

In addition, the insights into the current state of chemical prevention gained from the Section 305(b) Emergency Systems Review should provide other opportunities in the prevention effort. To the extent these State, local and industry activities set in motion by Title III succeed over the long term, chemical accidents can be reduced in number and impact.

TITLE III PROGRAM IMPACTS

Question: An article appearing in the New York Times on February 14 said that Deborah Sheiman, resources specialist for the Natural Resources Defense Counsel, "sees this more as an exercise in public relations, as opposed to a resource that can help develop better pollution controls on the industry."

How do you respond to this criticism?

Answer: The Agency is developing tools and materials to assist State and local authorities to implement Title III.

For example, the Agency has developed toxicity profiles for the Extremely Hazardous Substances listed under Section 302 of Title III. The Agency, in conjunction with the Federal Emergency Management Agency (FEMA) and the Department of Transportation, has developed technical guidance to help LEPCs conduct hazardous analyses for the extremely hazardous substances.

As required under Section 313, by July 1 of this year, thousands of facilities will submit release reports to EPA and States. Local and State governments will be confronted with the task of responding to questions from the public. EPA is planning to provide basic tools and materials to State and local authorities including toxicity data sheets, question and answer fact sheets and a basic information sheet for distribution to citizens. The Agency considers these non-regulatory programs as essential to the success of the Title III program and not as an exercise in public relations.

TITLE III ENFORCEMENT

Question: You are requesting $2 million for Title III enforcement, a tripling of the current level as you move into your enforcement program.

It has been asserted that not enough emphasis has been placed on Title III enforcement and too much emphasis has been placed on planning. In the March 2nd issue of Chemical Week I read that only about 20 percent of the facilities that should have submitted data about hazardous chemicals last October actually did so.

Do you agree that not enough emphasis has been placed on enforcement and, if so, what do you plan to do about it?

Answer: Since the requirements enforced by OPTS do not take effect until July 1988, it is too early to assess whether any given resource level is adequate. Nevertheless, we disagree that there is not enough emphasis placed on Title III enforcement. The Title III regulatory program, and therefore the corresponding enforcement program, is in an early stage of development, with large portions of the potential regulated community still to be identified. Necessary first steps in any new regulatory program are education and outreach to the regulated community, thereby producing a certain level of voluntary compliance. This educational and outreach effort is now underway and will continue. In FY 1989, there will be a sizeable increase in enforcement resources which will enable the Agency to mount an initial, targeted compliance program. These resources include funding for targeting inspections to facilities most likely to be in noncompliance so that the inspection program is as efficient as possible.

TITLE III FUNDING

Question: The volume of information EPA can expect to receive from facilities under the Title III program is vast. With 309 listed chemicals, and 30,000 facilities required to report, enormous quantities of paperwork will be generated. Not only is there great potential for problems with enforcement and quality control, but it also seems to me that the resources required to adequately handle the paperwork will be enormous. The $18 million you have requested divided by 30,000 facilities is only $600 per facility.

Is this adequate to deal with the expected influx of information?

Answer: The $18 million quoted represents the request for Title III efforts across EPA program offices. The OTS budget for implementing the Toxic Release Inventory and Reporting requirements (Section 313 of Title III) is $9.9 million. Section 313 does present an information processing and dissemination challenge. The OTS Title III budget is sufficient to process the emissions inventory forms and make the data publically available with a reasonable level of quality.

Question: What do you estimate to be the cost of establishing the national computer data base for the toxic chemical inventory and what do you estimate to be the annual cost to maintain the data base?

Answer: Costs for establishing the toxic release inventory (TRI) database need to be broken down into hardware costs, systems development/maintenance costs, data entry costs to annually enter the data into the database, and costs for public access to the database. With respect to hardware costs, EPA has chosen to utilize the recently upgraded IBM 3090 computer environment at EPA's National Computer Center in Research Triangle Park, North Carolina. Specific hardware costs have not been allocated to the implementation of Section 313, but are instead covered out of EPA's overall computer budget as managed by the Office of Information Resources Management (OIRM).

Costs from the TRI database also include software development and maintenance costs. In FY 1987, $100,000 was allocated from the OIRM ADP budget for this purpose and in FY 1988, $270,000 is being allocated to design the computer systems necessary to establish the TRI database and perform the necessary programming. We expect to continue some upgrades to software, as necessary, in future years at a lower annual cost of $50,000 to $100,000 per year.

Finally, in order to ensure public availability of the TRI data through computer telecommunications, as required by Section 313(j), EPA is planning to allocate approximately $500,000 per year to the building and availability of a public database.

STATE FUNDING FOR TITLE III

Question: Another problem with Title III is the lack of funding for the local planning committees that are expected to implement the program. As you know, we had $10,000,000 in the Senate passed version of the HUD-Independent Agencies appropriations bill last year for this purpose, but funds were stricken in conference. Can you give us a rough idea of how much it would cost to implement a comprehensive program of support for local communities?

Answer: EPA estimates the total State and local implementation cost for Title III in 1989 will be approximately $57 million. This estimate is derived from the four Regulatory Impact Analyses (RIAs) that were developed in support of Title III rulemakings. It includes costs for State emergency response commissions, local emergency planning committees and fire departments. The estimate reflects a consolidation of the cost categories shared across each of the RIAs and consequently represents total program cost estimates that are both lower and more accurate than those cited in the individual RIAs. Please note, all of the figures cited in this response were calculated in 1987 dollars.

Of this $57 million total, local emergency planning committees (LEPC) incur about $20 million for response plan development and information management. State emergency response commissions (SERC - $27 million) and fire departments ($10 million) account for the rest.

However, it should be noted that this estimate is based on timely completion of planned 1988 activities -- most significantly, emergency response plan development. Should delays occur, a sizeable portion of the 1988 estimated costs of approximately $129 million for State and local implementation of Title III could be deferred until 1989. Due to their crucial involvement in the planning process, the LEPSs require the bulk of the 1988 funds ($113 million).

Following 1989, the cost profile of these three groups--State commissions, local committees and fire departments--should stabilize at a slightly lower program total. For each of the years from 1990 to 1997, EPA estimates the total State and local implementation costs for Title III to be roughly $44 million with LEPCs requiring $19 million; SERCs $16 million; and fire departments $9 million.

Question: I am hesitant to suggest that we earmark an appropriation for local planning communities because we could be faced with astronomical cost growth. There is also the problem of determining a basis on which to award the funds.

The State of Kansas has an exemplary program in which fees are required of all companies which fall under Title III. The fees generate sufficient revenues to implement the community right-to-know program. Do you know of similar programs in other States and are you providing any advice to States and communities who might be in a position to establish such a program?

Answer: The State commissions, local committees and fire departments continue to assert the need for some Federal funding support for Title III activities. Nonetheless many have managed to generate resources. In a recent poll conducted nationally by the State of Kansas, of the nineteen respondent States, thirteen had approved significant State funding for current and/or future Title III operations. In addition, four States (Kansas, Texas, California and New Jersey) have implemented fee structures under the law, and eight other States (Florida, Louisiana, Mississippi, Massachusetts, Washington, Wisconsin, Ohio and Oregon) have pending legislation for such systems.

The EPA Regional offices perform many support and assistance roles in the Title III effort. Among these, sharing information between the States,both within a Region and among the Regions, helps promote valuable activities under Title III. In addition, EPA is working with the National Governor's Association to further other interstate coordination.

NATIONAL ADIPOSE TISSUE SURVEY

Question: Now I would like to talk about the National Adipose Tissue Survey, an item of concern to both myself and Chairman Boland. The survey was started in 1967 by the Public Health Service and was later transferred to EPA. The purpose of the survey is to analyze adipose tissue for chemicals and other pesticides.

You are currently spending $900,000 on the survey. How much do you plan to spend in fiscal 1989?

Answer: In fiscal 1989, we anticipate spending $900,000 on the adipose survey.

Question: In fiscal year 1984 through 1987, the average number of samples collected was about 730. I understand the cost per sample is about $2,000. How many samples do you plan to take in fiscal years 1988 and 1989?

Answer: In both fiscal 1988 and 1989, we will allocate approximately $175,000 for the collection of adipose specimens. Our design calls for the collection of 1404 adipose specimens. In fiscal 1988, due to the late start in collection because of uncertainties over the scope of the survey, it may be difficult to achieve the average of 730 specimens. In fiscal 1989, we expect to collect at least the average of 730 specimens, and possibly collect as many as 1000 specimens.

A distinction should be made between the cost of collection and the cost of analysis. The cost of collection of a specimen is about $175 to $250, assuming the number of specimens collected is between 700 and 1000. The cost of each chemical analysis is approximately $2000. Individual adipose specimens are physically mixed to form composite samples at a cost of $200 per composite. We anticipate creating fifty to one hundred composites from the individual specimens. We will also analyze fifteen to thirty quality control samples for a total of 65-130 analyses. Thus, the total cost of analysis is estimated to be between $130,000 and $250,000. (There are some savings in unit costs when more composites are analyzed.)

Question: How would the program be affected if you took fewer samples?

Answer: The sample size affects the cost and precision of the survey. The cost of collecting individual specimens and analyzing the composites has been stated in the previous answer. Reducing the sample size would reduce collection and analysis costs.

Because the survey is based on samples, and is not a census, there is sampling error associated with the results. That is, another sample of specimens selected under the same conditions could yield a different set of results from the first sample. The sampling error can be reduced by increasing the sample size. In statistical theory, the sampling error is inversely proportional to the square root of the sample size. Hence reducing the sample size by half would increase the sampling error by a factor of about 1.5.

In practical terms, smaller sample sizes make it harder to compare results from different years. Smaller sample sizes decrease the detection capability of statistical tests which determine whether differences between subgroups of the population reflect real differences or merely differences that would not appear if another sample had been selected.

Question: There are currently 10,000 stockpiled specimens in storage. A description of the survey indicates that "very little actual use of the data has occurred." How many of the stockpiled samples have been analyzed and for what purposes have the data been used?

Answer: Most of the specimens in the archive have been chemically analyzed. Exceptions are some of the 1980 and 1981 specimen sets, surplus specimens (in excess of quota) sent to EPA by cooperators, and the most recently collected samples from 1985 through 1987. In FY 1988, we are beginning to analyze the samples from these later years. This will result in approximately 95 percent of all design specimens collected since 1970 having undergone chemical analysis.

Some of the more important uses of the data have included: 1) the identification of trends of human exposure to chemicals such as PCBs; 2) the determination of subpopulations which are most heavily exposed, as in the case of MIREX exposure in the southern U.S.; 3) the estimation by the EPA of population exposures of nursing infants to hexachlorobenzene via breast milk; 4) the development of national baseline data to compare with special studies conducted by the EPA or State and local health officials; and 5) the identification of chemicals to which the general U.S. population is being exposed to support TSCA Section 4 test rules and section 8(a) reporting rules. An example of the latter is the proposed test rule on trybutylphosphate.

Question: The survey description also states "although analysis of the adipose samples may identify a chemical which is present in the fat of humans, there is no way of determining the source of the chemical which could be regulated." If this is true, what is the value of the program?

Answer: The human monitoring program does not have as its objective source identification, and thus it is not intended to replace the standard exposure assessment process. Its main value is to identify the toxic chemicals to which the population is being exposed. This provides a means of focusing EPA's regulatory programs toward chemicals on which we have de facto evidence of exposure. (Other uses have been illustrated in the answer to the previous question.)

Question: You are planning to create a panel of outside experts to study the program and the related blood program and make recommendations concerning their usefulness and continued funding. Has this panel been formed and when will the recommendations be available?

Answer: We have contacted the National Academy of Sciences concerning their participation on this panel. The Academy is interested and we expect them to form the panel during the summer months. We expect to receive the panel's recommendations by the fall of 1989.

Question: How much are you proposing to spend on the related blood sampling in fiscal year 1989?

Answer: We will not spend any money on the pilot blood sampling program in fiscal year 1989.

DIOXIN STANDARDS

Question: EPA is considering easing its regulations concerning dioxin, a highly toxic compound associated with the use of the herbicide "Agent Orange," having recalculated the dose that is associated with a significantly increased risk of cancer. The possibility of relaxed standards has evoked an outcry among environmentalists who fear that too much remains unknown about dioxin's effects on human health to reduce the standards.

Barry Commoner, Director of the Center for the Biology of Natural Systems at Queens College in New York believes this move would be "ludicrously bad science." How do you respond to that charge?

Answer: First, to clarify the context in which this comment may have been made, we believe that Dr. Commoner is referring to a draft scientific report on 2,3,7,8-TCDD, not to any regulatory proposals that would alter current standards.

As one of approximately 20 peer reviewers that EPA selected to elicit a broad range of scientific opinion, Dr. Commoner submitted many thoughtful, often provocative comments on the first draft of EPA's draft report reassessing the cancer risk potential of 2,3,7,8-TCDD for humans. Many of Dr. Commoner's comments have been incorporated into a new draft, along with those of other peer reviewers. At the same time, some of Dr. Commoner's comments seem to represent a particular point of view that does not appear to be in the mainstream of scientific thinking on this controversial chemical. Thus, while the first draft drew the charges described in the question, we believe that Dr. Commoner will welcome many of the revisions in the draft that will shortly be released for public comment.

In general, the peer reviewers supported EPA's attempt to update its scientific assessment and to describe the full range of scientific opinion on the cancer risk potential of 2,3,7,8-TCDD. Also, the reassessment brings EPA in line with the risk assessments of other Federal agencies.

Question: What are the latest developments concerning the move toward relaxed standards for dioxin?

Answer: The Agency has prepared a draft report reassessing the cancer risk potential of 2,3,7,8-TCDD for humans. This draft report is currently undergoing internal and external review and as a result EPA has not proposed any new standards based on the reassessment. More importantly, a reassessment of the cancer risk potential factor does not automatically translate into relaxed standards. Rather, any new risk assessments will use the potency factor along with other information on expected sources and levels of human exposure, and regulatory decisions will be based on the full range of scientific, social, and economic considerations called for under EPA statutes.

Question: Can you update us on the latest research EPA is conducting in this area?

Answer: EPA is conducting, supporting, or participating in many studies. For example, ORD currently funds a University of Wisconsin study on monkeys that is expected to resolve some uncertainties about the immunologic and reproductive effects of 2,3,7,8-TCDD. A study on soil ingestion in children will address general questions about contaminated soil as an exposure source, and a study on 2,3,7,8-TCDD uptake in plants will tell us whether this chemical makes its way from contaminated soil into the human food chain. Also, general studies on new methods (for example, biologically based models) will advance risk assessment methods for dioxins and other chemicals. EPA scientists are involved in dioxin studies sponsored by other Federal agencies (NIH, VA) as participants, contributors, or peer reviewers.

In addition, the Office of Toxic Substances is currently investigating two separate areas of potential dioxin/furan contamination. One is associated with the bleaching of paper pulp. The other is associated with the use of certain types of brominated flame retardants in plastic products. The paper investigations represent a coordinated effort between EPA, FDA, CPSC, and NIOSH. EPA has completed negotiations with the American Paper Institute for a study of the dioxin concentration in pulp, waste water and sludge for 104 paper mills in the United States. Work will begin immediately following signature on the final agreement. Brominated flame retardants is a new issue and it is in the early stages of investigation.

CLEAN AIR ACT CRITICISM

Question: You are requesting a total of $257 million for air quality programs in fiscal year 1989, a 5 percent increase over the current level.

In an article appearing in The Washington Times on January 4, the author asserted that "The Clean Air Act has been at best irrelevant in the fight against air pollution ... more progress against air pollution occurred in the pre-Clean Air Act days of the 1960s than during the 1970s after the statute was passed." A number of problems with the Clean Air Act have been cited by Brookings Institution analyst Robert Crandall. I'd like you to respond to each of them. First, Mr. Crandall says the law has been applied more stringently against creation of new sources than against existing ones, thereby burdening businesses in the high-growth areas much more than those in low-growth areas. What's your response?

Answer: Before responding to Mr. Crandall's assertions, it is worth providing some perspective to the Washington Times editorialist's conclusion that the Clean Air Act has been irrelevant in the fight against air pollution. It is true that, during the 1960s, substantial reductions were achieved in several of the Clean Air Act criteria pollutants. These reductions occurred due to sources installing controls which resulted in relatively low-cost emissions reductions. The fact is that, since passage of the Clean Air Act, ambient concentrations of most criteria pollutants have continued to decline, in some cases dramatically. (Data supporting this conclusion can be found in the National Air Quality and Emissions Trends Report published each year by the EPA.) These ambient concentration reductions have occurred despite substantial growth in both stationary sources and vehicle miles travelled by mobile sources. The principal reason these ambient concentrations have continued through the 1970s and early 1980s is because emission rates have decreased significantly. These reductions have been achieved despite the fact that reductions secured since passage of the Clean Air Act have been increasingly expensive on a per ton basis. EPA, therefore, believes it unlikely that the continued progress in improving air quality realized throughout the 1970s and early 1980s would have occurred without the Clean Air Act.

As for Mr. Crandall's assertion that the Clean Air Act imposes more stringent control requirements for new sources than for existing sources, it is true that the Act requires EPA to establish technology-based new source performance standards (NSPS) for a broad range of stationary sources of air pollution. These NSPS do not apply to existing sources unless those existing sources perform substantial plant modifications.

The Clean Air Act places on individual States the burden of planning for attainment of the ambient air quality standards. States develop State Implementation Plans (SIPs) which incorporate control requirements for both new and existing sources. However, Congress considered it appropriate to ensure attainment and long-term maintenance of the ambient standards by requiring new sources to install the best demonstrated technological system of continuous emissions reduction. There were several reasons why Congress considered the NSPS a good "insurance policy" for attainment of the ambient standards.

First, it is typically easier, from a technical and economic perspective, to design for and build in appropriate control technologies in new sources than to retrofit such controls in existing sources. For example, the cost to retrofit a scrubber on a utility powerplant, if technically feasible at all, may be many times the cost of building a scrubber on a comparable new facility.

Second, new sources are, essentially by definition, expected to be with us longer than sources already in existence. Therefore, the emissions reductions achieved at new sources have longer term significance for ambient concentrations than do comparable reductions achieved at existing sources.

Finally, and as a follow-on point to the previously-stated rationale, the application of best available control technology to new sources better ensures that future growth in emissions can be accommodated with lower risk to the attainment and maintenance of the ambient air quality standards.

Question: Mr. Crandall also claims that the law forced many companies to invest in inefficient, government-favored air pollution control technologies rather than efficient, equally available control devices. Do you agree?

Answer: There is no apparent evidence for Mr. Crandall's assertion. Virtually all air regulatory standards are based on the achievement of specified performance levels. Sources are given wide latitude to use any appropriate, demonstrated control technologies which are at least as effective and reliable as the control technologies on which the performance standards are based. Without more specific evidence supporting Mr. Crandall's claim, it is difficult to respond in any more detail.

Question: Finally, Mr. Crandall says that the law has regulated the wrong pollutants and has not demonstrably cleaned the air. How do you react to these statements?

Answer: A direct review of the January 4 Washington Times editorial leads to substantial doubt that this claim should be attributed to Mr. Crandall rather than the editorialist.

The editorial tries to substantiate the claim that the wrong pollutants have been addressed in the Clean Air Act by stating that "the EPA decided in 1977 ... to revise its requirement to limit 'oxidants' --such as hydrocarbons-- and simply to limit 'ozone.'" However, the editorial goes on to say that "[EPA] properly decided to eliminate the old hydrocarbon standard because it could find no tangible health harm in 'oxidants.'" Here the editorial seems to counter its own assertion. EPA is apparently lauded for focusing on the correct pollutant: ozone. Ozone is the pollutant for which EPA sets ambient air quality standards because, while ozone is formed as a result of the presence in the atmosphere of oxidants such as hydrocarbons, ozone is a significant air pollutant with significant adverse health effects.

The true agenda of the editorial appears to be to take issue with the stringency of the current ozone standard. The editorial claims that "[EPA's] ozone standard was (set at levels) more than twice as stringent as (sic) justified by contemporary medical research...". The Clean Air Science Advisory Committee (CASAC) recently concluded that the current ozone standard is in fact justified by contemporary medical research. CASAC recommended that EPA examine the appropriateness of revising the standard to a level ranging from the current standard to a more stringent standard.

OZONE ATTAINMENT

Question: You are requesting a total of $24 million for Air Quality enforcement. What portion of that budget will be spent on ozone attainment?

Answer: 57% of $24 million for Air Quality enforcement will be spent on ozone attainment.

Question: Approximately 80 million Americans live in areas that exceed the ozone standard. Further, that standard may not be stringent enough, according to EPA's latest review of the health data.

In a recent GAO report, GAO acknowledged that the deadline for ozone standard attainment was largely unrealistic, but attributed part of the problem to lax enforcement. The GAO investigated three cities -- Charlotte, Houston and Los Angeles -- and found that either control measures were not implemented, control measures implemented were not enforced, or such measures were not as effective as anticipated. There were also instances in which deficiencies identified in the cities' ozone control programs were not corrected.

Why hasn't EPA been more effective in overseeing community efforts to attain the ozone standards?

Answer: Over the last few years EPA has been studying the previous efforts and programs for addressing the nonattainment problem, and in particular, why those efforts have not been able to produce attainment in all areas as expected. The referenced GAO report highlights some of the major reasons why nonattainment continues to be a problem in many areas of the country. As we have found (and discussed with GAO), in some cases, certain control measures were not implemented and in some areas certain measures did not achieve their expected emission reductions due largely to inadequate enforcement or compliance programs or to inappropriate or ineffective design features. Furthermore, earlier modeling procedures (including collection of emissions and air quality data and projections of economic and motor vehicle growth) may have underestimated the emission reductions which would actually have to be obtained to attain the standards.

The EPA has also been examining its tracking and oversight activities and responsibilities and what changes might be needed to ensure that any problems with plan implementation or progress toward attainment can be quickly identified and resolved. Although for several years the concept of maintaining (and tracking) reasonable further progress (RFP)* toward attainment has been an integral concept of plan development and implementation, very few procedures, schedules, or consequences were established at the national level to apply the concept consistently or effectively to all nonattainment areas. As a result, mechanisms for systematically tracking implementation of nonattainment plans and identifying, reporting, and correcting problems promptly have not been consistently established or applied in all areas. The EPA believes that the lack of clear ~~and~~ consistent tracking and reporting procedures and schedules with specified definitions and consequences associated with inadequate progress (i.e., measure adoption/enforcement, achieving planned emission reductions) has contributed to the continuing nonattainment problem. As a result, EPA's policy proposed in November 1987 for post-1987 nonattainment areas contains considerable specification on the procedures, requirements, schedules, and consequences associated with measuring and ensuring progress toward attainment and maintaining the standard after it is achieved.

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*In the past, RFP has generally been defined as annual emission reductions sufficient in the view of EPA to ensure attainment by a specified date (deadline).

The EPA has also found that emission inventory procedures and tracking and compliance programs for small sources are critical in ozone control efforts. These sources have generally been underestimated in the past for their contribution to nonattainment problems and the potential benefits from their control. The EPA has developed additional guidance on inventorying these sources and has initiated with State and local agencies a small source compliance program aimed at effectively and efficiently using available resources to ensure that these sources comply with applicable limits.

The EPA and States have also recognized that earlier expectations of the effectiveness of many control measures were probably overly optimistic. The EPA has begun a major program with States to assess the effectiveness of these control measures and determine what improvements are needed to ensure that expected emissions reductions are achieved. This effort is an extension of the activities recently conducted to identify the status of implementation of all aspects of the SIP's and EPA's plans to work with States in identifying and correcting deficiencies or inconsistencies (with national guidance) in existing rules. The EPA's proposed policy for post-1987 nonattainment areas emphasizes the concept of rule effectiveness in existing and future rules by limiting credit for emission reductions from a measure to 80 percent of its potential unless special efforts are taken (and documented) to ensure that a higher effectiveness value is justified.

Question: What is being done to improve enforcement?

Answer: The Agency has embarked on several program changes to improve compliance and enforcement. The Agency continues to place ozone enforcement high on its priority list for resources. The significant violator program which is designed to resolve violations at sources that are located in nonattainment areas is very active. Over three hundred VOC sources were identified for action during FY 88.

In FY 88, the Agency initiated a VOC small source strategy to address the problem of small sources which individually are low emitters but in aggregate contribute significantly to the ozone problem. In order to promote the efficient use of resources the compliance office of air has just completed a surveillance targeting pilot program and has incorporated the results into a compliance monitoring strategy for implementation in FY 89.

The Agency also has just completed a guideline for implementing a rule effectiveness program which will be implemented in about 12 areas in FY 89. The rule effectiveness analysis is a systematic technique for evaluating the actual emission reduction results against the planning assumption made earlier in SIP planning activities.

Question: GAO suggested that there should be various categories and deadlines established that recognize that some locations have much more serious ozone problems than others, and that conditions should be specified under which sanctions would apply. I note that Congressman Waxman's bill would do this. Do you support GAO's recommendations?

Answer: We found the GAO report to be generally factually correct. Except for GAO's position that the construction ban sanction must be imposed in every designated nonattainment area that fails to attain, the report's findings and recommendations are compatible with the direction of the Environmental Protection Agency's (EPA's) proposed post-1987 policy. The report recommends that Congress amend the Clean Air Act to (1) establish a strategy that places areas into different categories with different attainment dates based on the severity of their air quality problems and (2) specify the conditions under which sanctions will apply, and the extent to which EPA will have discretion in applying sanctions. We support both these recommendations.

MOBILE SOURCE AIR POLLUTION

Question: You are requesting $15,906,800 for Mobile Source Air Pollution Control and Fuel Economy, a 4 percent increase over the current level. I am told by the Northeast States for Coordinated Air Use Management that budget support for this office has been reduced by about 50 percent in real dollars since 1980 even though their program responsibilities have expanded substantially. As a result, recall investigations have declined more than 60 percent, assembly line test orders have decreased by more than 50 percent, fuel inspections have decreased from 10,000 to 2,500 annually, and the number of vehicles tested for the development of emission factors has declined by more than 75 percent. In light of the fact that vehicle exhaust is a major contributor to the problems of carbon monoxide and ozone nonattainment, how can you justify such a cut in these program areas?

Answer: The mobile source program was reduced from the levels of 1980 due to the need to balance EPA's overall resources in view of other more pressing issues. The budget request does provide for an 18 percent increase in Abatement, Control, and Compliance resources in keeping with the importance of the issues addressed by the program.

Question: I see on page A-3 of your justifications that you will continue to work with state and local governments to establish and maintain effective vehicle inspection and maintenance programs and anti-tampering programs in order to improve vehicle emissions control standards.

As of January of this year there were 60 inspection and maintenance programs and 36 anti-tampering programs operating. How many additional programs do you expect to get up and running by January of 1989 and at what cost to the Federal Government?

Answer: At this time we do not know how many additional programs will be implemented by January of 1989. Development of additional programs for FY 1989 will be negotiated between EPA Regional Offices and State and local governments during the spring and summer of 1988. More importantly, the extent and number of new or revised inspection and maintenance and anti-tampering programs will depend on the ozone/carbon monoxide policy that will be implemented. This policy is currently under review after public comment and will be finalized later this year.

AIR QUALITY- STRATOSPHERIC OZONE DEPLETION RESEARCH

Question: You are requesting $12 million for stratospheric modification -- a tripling of the current level of support for this program. The funds will support the acquisition of scientific data necessary to determine the effects of stratospheric ozone depletion and global warming and develop control technologies.

Are any of the projects being carried out in conjunction with the National Science Foundation, the National Oceanic and Atmospheric Administration, or the National Aeronautics and Space Administration?

Answer: EPA's stratospheric modification research program emphasizes environmental, health, and biological effects resulting from stratospheric ozone depletion and global warming. The National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), and National Oceanic and Atmospheric Administration (NOAA) emphasize different areas of research. NASA's program emphasizes measurements of stratospheric ozone levels and NSF's primary responsibility is to serve as the lead Federal agency for ozone depletion research in Antarctica. NOAA's programs emphasize weather and climate monitoring which is not part of EPA's research mission. However, the Agency depends upon data and measurements from these agencies to help determine the rate of change or degradation of the ozone shield and to determine the impacts of these changes on weather and climate.

The Agency closely follows the research carried out by NSF, NASA and NOAA and communicates on a regular basis with scientists from these agencies to discuss research issues and priorities.

Question: Although I am very supportive of this valuable research, I want to make sure that you are not duplicating in any way the work of these other agencies. Can you tell me what mechanisms you use to avoid the possibility of duplication?

Answer: To avoid the possibility of duplication, the Agency keeps abreast of research and pertinent programs in other agencies via the formal coordinating committee for stratospheric ozone depletion research authorized in section 153 of the Clean Air Act. This committee, namely the Interagency Committee for Stratospheric Ozone Protection (ICSOP), includes representatives from the National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA), Federal Aviation Administration (FAA), United States Department of Agriculture (USDA), the National Cancer Institute (NCI), the National Institute of Environmental Health Sciences (NIEHS), the National Science Foundation (NSF) and the Department of State (DOS). EPA also holds additional formal and informal meetings with those agencies currently conducting ultra-violet (UV-B) exposure and effects work related to EPA's research program, such as USDA. These meetings further ensure that research is not duplicated. Finally, EPA intends to use workshops to discuss technical details of the results of stratospheric ozone depletion research in areas relevant to our regulatory mission.

MONTREAL PROTOCOL

Question: The Senate recently ratified the Montreal Protocol, which calls for a 50 percent reduction by the end of the century in emissions of chlorofluorocarbons, which destroy the protective ozone shield. There is some doubt as to whether the Protocol is stringent enough. An international team of researchers led by the National Aeronautics and Space Administration recently reported "the observed ozone loss is at least twice as large as scientists had predicted." Rafe Pomerance of the World Resources Institute said, and I quote, "If this set of facts had been on the table during the negotiations the nations would have agreed on a phaseout. I think the Montreal Protocol will have to be strengthened and will have to be strengthened soon." Do you agree with this statement?

Answer: Nations came to the protocol negotiations with widely divergent views of the severity of the risks to the ozone layer. The 50 percent reduction agreed to represented substantial movement on the part of many kev nations. It is difficult to speculate whether the latest scientific evidence would have provided a basis for agreement on a phaseout.

One of the key provisions in the Protocol (Article 6) establishes a process for the assessment of new scientific information leading to a review by the Parties of the control provisions. I have already written to Dr. Tolba, the Executive Director of the United Nations Environment Program urging him to begin the assessment process at the earliest date consistent with the terms of the Protocol. It is clear that based on the new scientific information greater and/or faster reductions are necessary. However, our first priority must be to obtain entry into force of the Protocol and then seek to obtain agreement among the parties on the additional steps required to respond to this new information.

Question: Mexico is the only country to date which has ratified the Montreal Protocol, is that right? How confident are you that most other nations will support the protocol?

Answer: The United States has recently joined Mexico as the second nation to ratify the Protocol. In addition, we are aware that many nations are well along in their ratification process. For example, Japan, Canada, and the European Economic Community have completed preliminary drafts of their domestic regulations. These nations hope to complete ratification by the early part of the summer. We remain hopeful that entry into force of the protocol will occur by the January 1, 1989 target date.

Since the Diplomatic Conference last September in Montreal, I am pleased to report that seven additional nations including the Soviet Union have signed the protocol. We are continuing our diplomatic efforts to encourage still other nations to join in this agreement to safeguard the ozone layer.

AIR QUALITY - STRATOSPHERIC OZONE DEPLETION RESEARCH

Question: The Montreal Protocol requires that a reassessment of relevant scientific knowledge be conducted in 1990 and 1994. To help prepare for those reassessments, EPA's budget calls for spending millions on research to enable the federal government to make more informed decisions about risks posed by ozone depletion. How does the NASA study affect EPA's initial budget proposal for scientific assessment research?

Answer: The NASA study does not affect EPA's initial budget proposal because the Agency has already requested a significant increase in funding for stratospheric ozone depletion effects research in FY 89 ($7,273,300 and 7 workyears above the FY88 level). We believe this is an appropriate funding level in light of the Montreal Protocol and the latest data from the NASA study.

Informed decisions on risks posed by ozone depletion are data dependent. Article 6 of the Montreal Protocol states in part "Beginning in 1990, and at least every four years thereafter, the Parties shall assess the control measures provided for in Article 2 on the basis of available scientific, enironmental, technical and economic information". We know that that there are large voids in the scientific and environmental data that could cause us to render less informed decisions than we would prefer. However, we believe our initial budget proposal for stratospheric ozone depletion research will provide sufficient resources to conduct scientific assessments.

The scientific assessment process is the systematic review, evaluation, and judgement of the data available from all relevant sources. Since some of the data on marine ecosystems, agroecosystems, and on forest ecosystems will take substantial time to collect, our scientific assessment work will be a continuing process which will be adjusted to accommodate the need as it may change.

GLOBAL WARMING

Question: The Global Climate Protection Act of 1987 was enacted last fall as part of the State Department's authorization for fiscal year 1988-1989. The Act directs EPA to propose to Congress a national policy on global warming. What type of effort will be required to develop a national climate policy, how much do you plan to budget for that effort and when might such a proposal be submitted to the Congress?

Answer: We anticipate that the formulation of a national policy on global warming will require coordination between all major Federal agencies and with state governments, industry and the scientific community. It also will require coordination with international organizations such as the United Nations Environment Programme (UNEP) and with selected countries on a bilateral basis. We are just in the formulation stage of developing our approach for such an effort. We expect to identify the budget requirements for this activity in the fiscal year 1990 budget.

AMBIENT AIR QUALITY

Question: You plan to spend close to $5 million on air quality research scientific assessment.

In February you issued your 1986 Air Trends Report. This report indicated that there was no change in carbon monoxide and particulate matter during the year. This seems to indicate that a more ambitious air pollution control program is required, and I see on page A-15 of your justifications that you will continue working on revising the criteria document for carbon monoxide and collecting new information to support revision of the particulate matter criteria document.

When can we expect to have new national ambient air quality standards for these pollutants?

Answer: Our current schedule is to complete the review of the revised carbon monoxide criteria document and the staff paper by the public and the Clean Air Scientific Advisory Committee by Fall 1990. Proposal of revised or reaffirmed standards would occur in late 1991.

The work on particulate matter focuses on a possible fine particle (less than 2.5 micrometers in diameter) national ambient air quality standard that would protect against visibility impairment. We expect to complete the update of the criteria document by the end of 1989 and the staff paper by mid-1990. Proposal of a new standard, if warranted, would not occur until December 1990 at the earliest.

RESOURCES FOR NAAQS REVIEW

Question: How much has been spent to date on developing revised standards for these pollutants, and how much more funding will be required?

Answer: The resources are shown separately below for carbon monoxide (CO) and for the fine particle (FP) national ambient air quality standard (NAAQS) review.

	Resources to Date[1]		Resources to Complete[1]	
	CO FTE/$000	FP FTE/$000	CO FTE/$000	FP FTE/$000
Criteria Document	4.5/ 133.0	0.2/ 50.0	4.5/ 170.0	6.0/ 550.0
Staff Paper, Regulatory Impact Analysis and Regulatory Packages[2]	0.3/ 50.0	1.0/ -	6.0/ 300.0	10.0/ 850.0
TOTAL	4.8/$183.0	1.2/$50.0	10.5/$470.0	16.0/$1,400.0

[1] Resources in terms of work-years of inhouse effort and thousands of dollars in extramural contract funds.

[2] Includes resources for public and Clean Air Scientific Advisory Committee review of Staff Paper, public hearing and analysis of comments on proposal, and revision of documents for promulgation.

AMBIENT AIR QUALITY

Question: You plan to spend $3.6 million on ambient air quality monitoring, a 5% decrease below the current level. If national ambient air quality standards are strengthened, how will this affect your need for monitoring funding?

Answer: The resources contained in this Program Element are used to provide Regional Office oversight and technical guidance to the ambient surveillance programs operated by State and local control agencies and to review, process and analyze the ambient and emission data which State and local agencies are required to submit to EPA. With the exception of the networks for sampling size specific particulate matter (PM_{10}), the State and local networks for sampling pollutants for which national ambient air quality standards have been set have been in operation for 5-10 years. Currently, reviews of the national ambient air quality standards (NAAQS) for ozone and lead are in progress and comments are being solicited on a short-term standard for SO_2. Monitoring analyses conducted as part of these reviews have not yet identified the need for networks or sampling schemes different than those now in operation. In general, monitoring requirements can be expected to change if one or more of the following changes is made to a NAAQS:

°The concentration level of the NAAQS is lowered so that probable violations can be expected in areas previously considered to be in attainment;

°The NAAQS is revised to include a short-term component such as a 1-hour standard when previously only 24-hour or longer periods were of concern;

°The NAAQS is revised to require measurement of a pollutant or compound that is different than that measured by instrumentation now being operated by State and local agencies.

We do not foresee any NAAQS revisions that would impact substantially on State and local monitoring programs during FY-1989. If additional NAAQS reviews indicate that State and local surveillance programs may need to be revised, this would require fairly extensive evaluation by the Office of Air and Radiation to determine technical requirements, estimated costs and implementation considerations prior to the publication of any proposed rulemaking.

Question: Will the proposed reduced funding require a reduction in the frequency of audits of State and local air quality monitoring programs?

Answer: The reduced funding will decrease Regional Office efforts in periodic audits, and in processing and validating ambient air quality data prior to its entry to EPA's national air data bank. For the audits, the major change will be to decrease the frequency from annually to bi-annually where previous audits have found few problems. The decreased Regional Office efforts in data processing reflect the growing involvement of State agencies in editing and validating their data. This is possible through use of the interactive software available to the States as a part of EPA's Aerometric Information Retrieval System (AIRS).

AIR QUALITY--INDOOR AIR

Question: You are requesting $10.3 million for pollutant strategies and air standards development, a decrease of 6.7 percent below the current level reflecting the anticipated completion of global climate studies in 1988.

I understand that about 90% of organic exposures occur indoors. In last year's house hearing, Mr. Potter, you mentioned that EPA was in the processs of developing the analytical framework to cross reference pollutant exposure levels and health effects in order to determine which indoor air pollutants present the most serious health risks.

I see on page A-29 of your justifications that work is continuing on the development of the framework for an indoor air program. When will the framework be complete?

Answer: The hundreds of pollutants and sources and multiple indoor environments with varying patterns of human activities, human exposures and human sensitivities make the development of a framework for indoor air a highly complex task requiring a comprehensive analytical effort. In addition, the level of scientific information available is limited to such an extent that implementation of a framework incorporating all the hundreds of pollutants is several years away. However, we have developed an overall approach to addressing the most significant indoor air quality problems which includes research, coordination, and information dissemination. EPA's overall policy and strategy was articulated in our June 1987 Report to Congress.

INDOOR AIR POLLUTION

Question: How much has been spent to date on developing an indoor air pollution framework and how much additional funding will be required to complete the project?

Answer: We spent $15 thousand in an exploratory effort to develop a decision framework. However, as previously indicated, indoor air pollution is perhaps one of the most complex environmental problems which EPA must address. Thus, development of a framework that incorporates all the hundreds of pollutants, sources and indoor environments would be a multi-year, multimillion dollar undertaking. We are focusing our efforts on the major pollutant sources and environments.

Question: Also Mr. Potter, you said you did not have any way of categorizing the various types of indoor pollutant problems in homes. What is the agency doing to develop a method for categorizing different types of indoor air pollutants?

Answer: We said that every individual home is an air pollution site and that problems are not always similar. The same is true for schools, offices, and other indoor environments. Nevertheless, within each environment, we can categorize indoor air quality problems in terms of those which result from specific sources or pollutants; those primarily related to the building design, operation and maintenance parameters; and those which result from specific occupant behaviors. Our indoor air program and research activities include all these dimensions. These activities will be articulated in a report to Congress which is due in October 1988.

INDOOR AIR QUALITY

Question: You are requesting $3.6 million for indoor air pollution research. How much of this is earmarked for radon mitigation efforts?

Answer: Although these programs are closely coordinated, the President's budget request of $3.6 million for indoor air pollution research does not include resources for radon mitigation research. The President's budget request separately identifies $3.9 million for radon mitigation research.

Question: The Science Advisory Board evaluated Research and Development's indoor air research program in September 1986. The evaluation focused on research plans, design of a field study, and review of ongoing projects.

The Board recommended that EPA develop a clear policy statement that indoor air quality is an important and essential component of its responsibility. Has such a policy statement been developed ?

Answer: EPA believes that indoor air quality is an important and essential component of its responsibility. Our June 1987 Report to Congress constituted a significant policy statement by EPA. We are not currently developing a separate policy statement. We are and will continue to develop public information documents, such as fact sheets and a public information booklet, on indoor air.

AIR QUALITY -- INDOOR AIR

Question: The Board also recommended that the proposed limited field survey should not be carried out as currently designed because it would require a level of resources out of proportion to the findings which would be derived. Has a revised survey with a more clearly defined set of objectives been undertaken?

Answer: In response to the comments of the EPA Science Advisory Board and others, the Office of Research and Development (ORD) developed a more balanced indoor air research program. Rather than focussing on a national multipollutant survey, the ORD program includes research devoted to source characterization and mitigation, measurement methods development, health effects associated with indoor pollutant exposures, exposure assessment and risk characterization. This balanced research program will include targeted field studies designed to support the overall research effort.

RADON MITIGATION

Question: You are requesting $3.8 million for Radiation Research Environmental Engineering and Technology, an increase of more than $1 million over the current level. Last year, Dr. Newill indicated in the House hearing that EPA was working on developing radon mitigation techniques which cost about $1,000 per home. What progress has been made in this area?

Answer: The Agency is studying mitigation techniques which could cost significantly less than $1,000. These techniques include crawl space ventilation (both natural and forced), subslab ventilation from outside a slab-on-grade house, and sealing. The applicability of these techniques for a variety of housing types is currently being evaluated. However, the Agency currently anticipates that in some homes, such as those with high levels of radon, mitigation costs will remain greater than or equal to $1,000. Reduction of costs below the $1,000 level is not foreseen for these houses in the near term.

RADON MITIGATION

Question: I understand the agency does not certify radon mitigation contractors. How are consumers protected from untrained contractors?

Answer: The Environmental Protection Agency has developed a variety of training programs and public information materials to help the States protect consumers from unqualified contractors. In the training area, we offer a technical training course on radon diagnosis and mitigation techniques. In the past two years more than 1500 State officials and private contractors from 40 States have participated in the course. Several States use the list of contractors who have taken the EPA course as a referral list for homeowners. A few States require participation in the EPA training course as a certification requirement for radon contractors and other States are developing their own training courses using the EPA course materials. We also have the House Evaluation Program (HEP) which provides State officials and private contractors with hands-on training on radon diagnosis and mitigation. The other major training activity underway is a seminar for homebuilders which was developed jointly by EPA and the National Association of Homebuilders and has been offered several times across the country.

We have also developed several information brochures to educate consumers on various aspects of indoor radon problems. Several thousand copies are distributed every year by EPA, States and other public and private organizations. These brochures listed below include information on common mitigation techniques and suggested price ranges:

- "A Citizen's Guide to Radon"
- "Radon Reduction Methods: A Homeowner's Guide"
- "Removal of Radon from Household Water"

- "Radon Reduction in New Construction"
- "Summary of State Radon Programs"
- "Radon Reference Manual"

Finally, the Administration has supported the State Radon Program Development Act (S.744), now under consideration in the Congress, which would require EPA to establish a contractor proficiency program and to publish information materials for State and local officials and the private sector.

Question: There are about 1500 contractors performing radon mitigation activities. How many of these contractors have been tested and to what cost to the federal government?

Answer: EPA does not currently have a program to test the proficiency of radon contractors nor do we have estimates on the number of contractors performing radon mitigation activities. As stated earlier, the EPA has trained about 1500 State officials and private contractors but participants are not certified by EPA.

We do have a voluntary program to test the proficiency of radon measurement companies. This highly successful program ensures that qualified testing companies are available to homeowners.

Question: How much more will you need to spend on this activity in fiscal years 1988 and 1989?

Answer: The State Radon Program Development Act (S.744) would authorize $1 million for training activities and the development of a contractor proficiency program. Although we believe the contractor proficiency program would operate in a similar fashion to the RMP, we have not made an estimate on the level of funding needed to implement this program.

OPPE FUNDING AND STAFFING

Question: You are requesting $23.8 million and 214.1 workyears for the Office of Policy, Planning and Evaluation, a $1.8 million increase over the current level with no change in workyears.

I see on page MS-47 of your justifications that 221 workyears were planned for fiscal 1988 yet you currently have only 214.1 workyears you are requesting in fiscal year 1989. Did you determine that the additional workyears were not necessary, and if this is the case, what has occurred in the last year to change your staffing estimate?

Answer: The FY 1988 Appropriations process resulted in a lower workyear level for the Agency. OPPE's workyear level, as well as that of other offices, was reduced to meet the allocated workyear level.

OHRM FUNDING AND STAFFING

Question: You are requesting $1,945,800 for the Office of Human Resources Management, a 20 percent increase over the current level of funding and an increase of one workyear. The increase will support in-house training activities. Please describe these training activities and provide a break-down of expenses associated with them.

Answer: The additional workyear and approximately a third of the funding increase will support the EPA Institute. This increase will further expand the number of training courses being offered by the Institute and will help streamline the administrative processes associated with the Agency's training programs (e.g., forms processing, record keeping, etc.). The balance of the requested increase will fund improvements to a variety of career development programs tailored to the full range of EPA employees from programs for the secretarial and clerical workforce to programs created to fully develop the Agency's Senior Executive Service employees.

The EPA Institute is comprised of a network of volunteer instructors, EPA employees from all Agency locations, who share their expertise with their colleagues through courses that range from short seminars to year-long courses offering university credit. It was created to help address EPA's extremely challenging and technically diverse mission.

In recent years, EPA has been faced with a growing and relatively inexperienced workforce. New legislation such as the reauthorized Superfund, the Safe Drinking Water Act, and the Technology Transfer Act has placed an even greater emphasis on providing quality training to Agency staff. In combination with the traditional forms of training, the Institute is playing a critical role in addressing the Agency's training needs and will serve as primary vehicle for transferring technology to State and local governments.

The economic advantage of the Institute concept is already being realized. In FY 1985, before the Institute was created, the average cost per training instance was $171. In FY 1987, after only six months of operation, the Institute brought the per instance cost down to $143 (a 16% decrease). Conservative estimates for FY 1988 indicate that the per instance cost will drop further to $131 (a 23% decrease from 1985). Meanwhile a greater number of employees are being trained. In 1985, there were 12,122 total instances of training; by the end of FY 1988, the Agency predicts that there will have been 19,700 training instances (a 63% increase).

The "Expert Witness" seminar provides an example of the economies associated with providing training through the Institute as compared to hiring a contractor to present the same course. During FY 1986 and 1987, 600 students took this Institute course which cost $6,000 to develop and deliver. It is estimated that to have the same course reaching the same population developed and presented by a contractor would have cost $90,000. On a per student basis, the Institute approach cost $10, with a contractor approach, it would have cost $150 per student.

Clearly, the Institute is having a dramatic positive impact on the number of employees being trained, the number of courses they are taking, and the costs per student. By the end of FY 1988, the Institute will be offering 55 different courses and will be reaching over a third of the EPA population. Not only are more employees being provided training relevant to their jobs, but in general, employees rate Institute courses as being of higher quality than comparable outside courses.

Other training activities at EPA include a variety of employee development programs aimed at cultivating a highly motivated, exceptionally talented workforce throughout the Agency. These programs include secretarial development programs, the Greater Leadership Opportunities (GLO) Program for women and minorities, the Framework for Achieving Managerial Excellence, and the SES Candidate Development Program.

STATE EPA DATA MANAGEMENT

Question: EPA is establishing a national database system in order to share data with the States. I understand that approximately 10 States came on line in 1987, and that 10 to 15 additional States are expected to come on line this year.

For the record, indicate what States are currently using the National Database System. Also list the States that are expected to come on line this year.

Answer: Following is a list of States that are currently using our national database system and a list of States that plan to come on line this year.

States Currently Using

Maine
New York
New Jersey
Virginia
Georgia
Tennessee
Indiana
Arkansas
Missouri
California
Oregon
Utah

States Coming On Line

New Hampshire
Delaware
West Virginia
Florida
Ohio
Michigan
Illinois
Wisconsin
Minnesota
Kansas
Nebraska
Texas
Colorado
Nevada
Washington
Idaho
Hawaii
Puerto Rico
Iowa

SUPERFUND

Question: There are reports that Superfund revenues are not coming in as fast as expected and thus less is available for cleanup. What is causing this problem? Money seems to be available for assessments but no money for remedial work.

Answer: According to the latest estimates from the Treasury Department on Superfund revenues and Agency receipts from cost recoveries, the Agency will have sufficient amounts to cover its needs. The current projection of the unobligated balance in the Hazardous Substance Superfund at the end of 1989 is estimated to be $270 million. This projection assumes that the Agency fully obligates funds currently available and the 1989 President's request.

Trust Fund resources are not restricted to a specific activity. They can be used to support any authorized activity - assessments as well as remedial work, removals as well as enforcement, interagency as well as R&D, etc. The resources requested in the 1989 President's Budget adequately support the entire range of cleanup activities required to carry out the Superfund mandate.

SITE ASSESSMENTS

Question: Some States with active Superfund and RCRA programs have complained that EPA is duplicating State assessment work with new assessments of your own. This wastes funds that would otherwise be available for cleanup. How do you decide whether to use State-generated information or require more studies? Are these decisions made by contractors who may have a vested interest in rejecting State studies?

Answer: State participation in the site identification process is integral to the Agency's efforts to target the most potentially hazardous waste sites. It is possible that sites where the State has undertaken some studies are entered into the EPA CERCLIS inventory. Pursuant to SARA, EPA is required to perform a Preliminary Assessment (PA) on all these sites and pursue further study through Hazardous Ranking Scoring system "where warranted." Both EPA and States perform PAs using existing data.

EPA and its contractors would review available State data on a site. EPA would not collect duplicate data during the PA or subsequent Site Inspection (SI) if State data are technically and legally sound. Although EPA contractors review the data and make recommendations, they do not make the decision to reject or use State data. All decisions are made by EPA. If the State does the PA, presumably they would make use of their data in evaluating the site if appropriate.

INCINERATOR ASH DISPOSAL REGULATIONS

Question: If Wisconsin and other States are to develop, implement and enforce new landfill regulations they will need resources and information from EPA. States need clarification, guidance and regulations on incinerator ash disposal. These regulations were due in December, 1987. What are you doing to prepare these regulations and when will they be completed? They were due last December.

Answer: The Agency recognizes the need to provide guidance to States and municipalities regarding the safe disposal of municipal waste combustion (MWC) ash. There is increasing demand for MWC facilities, but also increasing concern about the potential environmental consequences of combustion. In November 1987, the Agency released a study of MWC ash and indicated its intention to develop technical guidance on the issue in 1988. Along with development of the guidance, the Agency is assessing the characteristics of MWC ash, its potential environmental and human health impacts, and a number of ash disposal and reuse options. Data collection and site analyses are being conducted by EPA, and several industry groups.

While there are no Resource Conservation and Recovery Act (RCRA) mandates that require regulations that apply specifically to ash disposal, the 1984 amendments to RCRA (Section 4010(c)) require EPA to develop revised standards for Subtitle D (non- hazardous waste) facilities. These criteria will involve a number of provisions which will also apply to any ash disposed in the municipal facilities. The Agency expects to issue proposed criteria revisions by June 1988.

RCRA GRANTS

Question: When hazardous waste grants were cut back, States were promised further funds to make up part of the difference. According to the State of Wisconsin, now that more funds are available, the Federal EPA wants to use these funds itself instead of giving them to the States to carry out the requirements of the RCRA amendments. What can you tell me about this situation?

Answer: Hazardous Waste grants have increased every year from fiscal year 1986 through the fiscal year 1989 request. The State Grant funds are administered by the EPA Regional offices and all of the funds are made available to the States, unless a State is not participating in the Resource Conservation and Recovery Act (RCRA) program or is unable to "match" the Federal funds through State monies. When a State is not participating or is unable to match Federal funds, EPA directs the funds that would have been allocated to the State in support of RCRA activities in that State. In some instances, Regions and States have agreed to put a portion of grant funds into EPA national contracts that provide specialized support and technical expertise for the State's permitting and corrective action programs.

CLEAN LAKES FUNDING

Question: The Agency has included no funds for the Clean Lakes Program in Fiscal Year 1989. How much money remains in this program?

Answer: All appropriated funds (FY 1987 and prior years) have been obligated to Clean Lakes projects. Approximately $23 million obligated to 150 projects has yet to be expended. Most of this unexpended amount is for projects funded in the past three years and remains available to the grant recipients.

Question: How much would it take to revive this important program?

Answer: EPA has not requested funding for this program because the Agency has provided sufficient guidance and demonstrated effective assessment and abatement techniques. EPA believes that States are able to effectively address their lake restoration needs, along with other local priorities, under existing water quality programs. However, EPA currently has staff in both Headquarters and the Regions with overview responsibilities for the 150 ongoing Clean Lakes projects. These staff would be available to administer the award and oversight of new Clean Lakes grants if additional grant funds were appropriated by Congress.

SAFE DRINKING WATER ACT AMENDMENTS

Question: The new Safe Drinking Water Act requirements increase States' workloads four-fold, yet the funding requested is unchanged from the current level. Will there be any adjustments in the program to take the shortfall in funding into account?

Answer: The Agency has attempted to structure the regulations in phases to alleviate an overwhelming burden of regulatory requirements being imposed on the States at one time, while still adhering to statutory requirements. In addition, the Agency has provided the States with a great deal of flexibility in implementing the regulatory requirements in an effort to manage the regulatory impact. Meanwhile, as part of its program strategy, the Agency is implementing a mobilization effort directed at constituent groups from outside of the regulated community who have a distinct concern for the safety of their drinking water. Through the support of these groups, the Agency will stimulate utility compliance with drinking water regulations through information and technology transfer, improvements in operation and maintenance, and increased financial support. The strategy also recognizes that States may lack the technological expertise necessary to accommodate new treatment technologies and address complex issues and will incorporate a technical assistance program which will meet the needs of States as they adapt to the new standards.

SAFE DRINKING WATER ACT AMENDMENTS

Question: Last November, E.P.A. issued proposed regulations for mandatory filtration and disinfection of surface water supplied drinking water systems. Will the Agency apply the same kind of mandatory program for groundwater based systems when these regulations are issued? In Wisconsin we have very pure groundwater systems for the most part. Will these systems be required to install filtration and disinfection where they are not needed especially since the chlorination itself can create pollution problems?

Answer: The Agency will propose disinfection requirements for ground water systems in the Fall, 1989, at the same time as disinfection/by-products Maximum Contaminant Levels. The disinfection rule will include criteria for variances such that ground water systems that already provide safe drinking water will not have to install disinfection. No requirements for filtration for ground water systems are planned.

STORM WATER DISCHARGES

Question: Why is EPA requiring large-scale sampling of existing storm sewers in large cities as the first priority under new storm sewer program?

Answer: The Water Quality Act of 1987 (WQA) requires that EPA develop National Pollutant Discharge Elimination System (NPDES) permit application requirements for discharges from large municipal separate storm sewer systems (systems serving a population of 250,000 or more) by February 4, 1989, and for discharges from medium-sized municipal separate storm sewer systems (systems serving a population between 100,000 and 250,000) by February 4, 1991. At this time, the Agency has not published or requested comments on a proposed rule on these permit application requirements.

The WQA provides that permits for municipal separate storm sewers may be issued on a system- or jurisdiction-wide basis. Our regulations will establish permit application requirements to accommodate system-wide approaches to evaluating and controlling storm water pollution problems. We expect that our regulations will allow a single permit application to cover all municipal separate storm sewer discharge points from an entire municipal system. Sampling of all discharge points in the affected jurisdictions is not likely to be necessary or required. Rather, the Agency prefers limited representative sampling, supplemented with source identification information and a limited field investigation of illicit discharges (discharges of industrial wastewaters or sanitary sewage to municipal separate storm sewers without a NPDES permit). We will, of course, be inviting public comment on our proposed permit application requirements before they become final regulations.

Question: Wouldn't it be more cost-effective and reasonable to first control new construction discharging into sensitive waters which is the last priority under the program?

Answer: Water quality impacts associated with discharges from municipal separate storm sewer systems may be caused by a wide variety of pollutant sources, including: illicit discharges (discharges of industrial wastewaters or sanitary sewage to municipal separate storm sewers without a NPDES permit); storm water discharges associated with industrial activity; urban runoff (runoff from residential and commercial areas and highways); and construction site runoff.

The Agency believes that the priorities given to reducing pollution from the various sources noted above should depend on site specific factors. For example, in many older core cities, control of illicit discharges, which were legal connections in the past, may present opportunities to drastically improve the quality of discharges from municipal separate storm sewers. Outside of core cities, in areas of rapid development, controls on construction site runoff, and measures to reduce pollutants in runoff from newly developed urban areas may present the most practicable and cost-effective opportunities for reducing pollutants in discharges from municipal separate storm sewer systems. The Agency favors developing permit application requirements which facilitate site- and source-specific decisions for management controls.

KENOSHA COUNTY

Question: You recently stated that you were considering adding Kenosha county to the Chicago portion of the Illinois state air pollution implementation plan. This county and its industries are already more restrictively regulated than Chicago and its industries and Chrysler is shutting down Kenosha operations, further reducing emissions by 1,000 tons over last year's emissions. Isn't it unfair to force Kenosha to get offsets from the Chicago area and put growth decisions for Kenosha in the hands of Illinois ? This will further depress the Kenosha economy and penalize a state which is complying with E.P.A. requirements. When do you expect to make a decision regarding Kenosha's status ?

Answer: On November 24, 1987, EPA published its proposed policy for areas not attaining the ozone or carbon monoxide air quality standards by December 31, 1987. The proposed policy recognizes that the majority of urban areas are experiencing violations of the ozone standard and in addition previous policy viewed the air quality planning areas on too narrow a basis. The proposed policy expands the planning area by using the metropolitan statistical area (MSA), or where one exists, the consolidated metropolitan statistical area, as a basis for developing further SIP revisions. The MSA /CMSA was chosen as a means of defining the planning area due to the fact that the parameters considered in defining the areas that comprise the

MSA/CMSA are basically the same factors that contribute to ozone, namely large population centers and commuter activity.

In a number of cases, MSA/CMSAs involve more than one State, as is the case with Kenosha county. Where this occurs, EPA expects each State involved to cooperate fully with each other State in developing an overall plan to bring the area into attainment with the air quality standard. Each State, however is responsible for establishing and enforcing its own regulations. EPA's role would be to ensure that the various State's regulations are in concert and that attainment of the air quality standards are on a common timeframe.

The public comment period on EPA's proposed policy closed on March 28, 1988. A number of comments received are directed at the use of MSA/CMSA as the planning area. We are currently in the process of reviewing these comments and evaluating suggested alternatives.

OZONE PROVISION VIOLATIONS

Question: What is E.P.A. going to do to force Illinois and Indiana to comply with ozone provisions of the Clean Air Act which they have been violating since 1982 ?

Answer: EPA has recognized that the SIPs in Illinois and Indiana have not been adequate to bring about attainment of the ozone air quality standard. In July 1987, EPA proposed to disapprove those portions of the Illinois and Indiana SIPs associated with Chicago, East St. Louis and Louisville. This proposed disapproval was based on the States' failure to produce and submit to EPA SIPs that demonstrated attainment with the ambient standard. This proposed disapproval also included imposition of the construction ban sanctions. Also, these States will receive "SIP call" letters in the near future, which will require them to revise their SIPs in accordance with requirements established for post-1987 areas. Failure to respond would subject them to available sanctions.

CONSTRUCTION BAN

Question: Why hasn't EPA lifted the sulfur dioxide construction ban for Milwaukee and Green Bay when Milwaukee has not had a violation in 10 years and Green Bay in 4 years? When will you act on the request by Wisconsin?

Answer: The EPA has not lifted the construction bans for sulfur dioxide (SO_2) in the Milwaukee and Green Bay areas because both areas lack federally-approved State implementation plans (SIP's) for SO_2 and both areas are designated nonattainment for SO_2 under section 107.

Milwaukee

The EPA proposed to approve Wisconsin's SO_2 SIP for Milwaukee County in 1984. A rulemaking package taking final action on the SIP revision is expected to be published soon. Upon approval of the SIP, the construction ban will be lifted.

The State has also requested a redesignation of the area to attainment and the EPA proposed to approve the State's request. Final approval of the redesignation request is linked to final action on the SIP.

Green Bay

Wisconsin has submitted a revised SIP for the Green Bay area and EPA plans to propose action on this by the summer in the Federal Register.

The State has also requested redesignation of the area to attainment, but failed to submit the requisite compliance data to support its request in accordance with EPA policy and guidance on implementation of section 107. The Regional Office wrote to the State requesting this information, but the State did not respond. Therefore, the EPA is prepared to go forward with a proposed disapproval of the State's request.

AIR TOXICS AND THE GREAT LAKES

Question: Recent reports indicate that as much as 90 percent of the toxic contamination of Lake Superior is due to deposition of toxics from the air and that roughly half of the contamination of Lake Michigan is due to such toxic deposition. What are your estimates of the contribution of air toxics to the contamination of the Great Lakes?

Answer: Current estimates of toxic substance deposition to the Great Lakes from air are based largely upon research studies. Further, the estimates are not for the total deposition of toxics, but rather are specific to certain toxics for which measurements have been made with a reasonable degree of validity. Until the current enhancement of the Great Lakes Atmospheric Deposition monitoring network is completed, estimates of deposition will remain limited in the number of contaminants measured and the accuracy of estimated deposition to the Great Lakes. The estimates currently being cited result from an International Joint Commission-sponsored workshop of experts that concluded that approximately 90 percent of current PCB input to Lake Superior is attributable to the atmospheric pathway, 58 percent for Lake Michigan, 63 percent for Lake Huron, 7 percent for Lake Erie, and 6 percent for Lake Ontario. Similar estimates, which were considerably higher for Lakes Erie and Ontario, were derived for benzo"a"pyrene, total DDT, and lead. Mirex, which is observed mainly in Lake Ontario, was estimated to have at most a 5 percent atmospheric input component.

Question: Why haven't emissions of air toxics to the Great Lakes been controlled with as much stringency as direct effluent discharges?

Answer: The process of determining the sources of air toxics affecting the Great Lakes is a relatively more complicated one, and controlling the emissions of these toxics may involve international discussions on such matters as use of pesticides, banned in the U.S., in Central America. EPA's Office of Water has focused more on the priorities of controlling direct effluent discharges and protecting sources of drinking water, as mandated by the Clean Water Act, the Safe Drinking Water Act, and the Great Lakes Water Quality Agreement with Canada. Regulation and control of air toxics by Federal and State agencies to date under the Clean Air Act has been to protect public health and has not been directed toward preventing deposition into the Great Lakes. Regulation of air toxics for health purposes only will have the simultaneous benefit of reducing atmospheric emissions, thereby reducing depositions as well. Control of air toxics, specifically related to deposition to the lakes, is now in the early stages of development.

Additionally, we need to improve our understanding of the causes and effects of air toxics deposition. Knowledge of the significance of this deposition is being developed. The relative importance of local emissions versus long-range transport is largely unknown. The degree of regulation needed to control harmful amounts of atmospheric deposition in the Great Lakes, both from within the watershed and from other areas, therefore, continues to be unclear.

Question: The Great Lakes Water Quality Agreement established a new annex detailing steps the United States and Canada have agreed to take to monitor and reduce air toxic deposition. Could you please tell us what the status is of developing a joint monitoring program?

Answer: As part of the International Joint Commission's Atmospheric Deposition Task Force, the United States and Canadian experts have developed a recommended strategy and design for a joint monitoring plan. The recommended plan will serve as a basis for discussions between the Parties during negotiations for adoption of a final joint program. In the interim, activities are already taking place to implement certain portions of the joint plan that were common to various proposals considered by the experts.

The United States has established a master research site for monitoring air toxics at Green Bay, Wisconsin. Canada is also establishing a master site at Point Petre on the northeast shore of Lake Ontario. These sites will employ samples for measuring trace organics in precipitation, both wet and dry, as well as trace organics in the ambient air. Continuous measurements of meteorological parameters such as wind speed/wind direction, temperature, relative humidity, and solar radiation, are being taken at these sites.

EMISSION OF TOXIC SUBSTANCES

Question: In addition to monitoring, the United States has agreed to develop and implement measures to control or eliminate the sources of emissions of toxic substances. Can you tell us what the time frame is for developing these controls?

Answer: Current programs are attempting to better describe and monitor the significance of air toxics deposition to the Great Lakes and to estimate sources of air emissions within the basin. Once this information is more complete, control programs can be designed and implemented to mitigate specific emissions from specific sources. It is not possible at this time, therefore, to establish a time frame for developing the controls.

CENTER FOR CLEAN AIR POLICY

Question: I understand that the Center for Clean Air Policy, a nonprofit state-based organization, is examining the potential for cost-effectively integrating acid rain controls and controls for air toxics at power plants. Are you familiar with this group's research and are you looking at ways to integrate air toxics controls with acid rains controls and/or ozone controls?

Answer: On April 19-20, the Center for Clean Air Policy held a meeting to discuss integrating air toxics and acid rain controls at power plants. Various states including Michigan, Minnesota, Massachussetts, Vermont and Ohio as well as the Environmental Protection Agency (EPA) and Bechtel Power Corporation participated in this meeting. The Center for Clean Air Policy has stated that this meeting is their first research effort on the subject.

EPA is considering regulating radionuclide emissions from coal-fired boilers under Section 112 of the Clean Air Act. During this process, EPA will consider the impact on other pollutant emissions such as sulfur dioxide (SO_2), nitrogen oxides and particulates. If wet or dry scrubbers and electrostatic precipitators or bag houses are used to control power plant emissions of SO_2 and particulates, respectively, air toxic emissions (e.g., radionuclides, hydrochloric acid, arsenic and mercury) are concomitantly controlled.

Air toxics and fine particle case studies have been developed by EPA in Philadelphia, PA, Santa Clara, CA, Baltimore, MD and Denver, CO. These case studies dealt with the criteria pollutant side benefits that might result from controlling air toxic emissions.

AIR TOXICS AND THE GREAT LAKES

Question: The State of Wisconsin has identified power plants as the second largest source of airborne mercury. If utility power plants were not exempt from NESHAPS, what regulations for power plants would EPA have to promulgate to protect public health and the environment? Which toxic pollutants from power plants pose the greatest human health risks and the greatest environmental risks?

Answer: Utility power plants have not been regulated under NESHAP because in the past the Agency has determined that the public health risks from utility emissions of hazardous air pollutants (e.g., asbestos, beryllium, mercury) do not justify regulation under Section 112 of the Clean Air Act. We are currently in the process of reassessing the impacts of coal and oil combustion from power plants and other combustion sources. Because of the broad range of toxic and hazardous air pollutants that potentially can be emitted, we are performing a multi-pollutant risk assessment to evaluate the total public health burden of these emissions. The individual pollutants under evaluation include asbestos, beryllium, cadmium, chromium, benzo-(a)pyrene, formaldehyde, radionuclides, acetaldehyde, acrolein, mercury, lead, manganese, nickel, and selenium. Until we complete this analysis, we will not know what standards, if any, are warranted. Preliminary indications are that public health risks from power plants are relatively low because of their tall stacks and controls already in place due to State implementation plan regulations and new source performance standards. At the conclusion of our analysis, an announcement of our findings and any planned rulemaking actions will be made in the Federal Register.

GREAT LAKES BASIN

Question: The National Research Council and the Royal Society of Canada have suggested that residents of the Great Lakes Basin are "exposed to and accumulate appreciably more toxic chemical burden than other human populations in similarly large regions of North America." Do you agree with this assessment and if so, what are you doing about it?

Answer: Based on existing information, the conclusions of the National Research Council and the Royal Society of Canada regarding exposure to chemicals in the Great Lakes Basin appear valid. The large population in the basin combined with extensive industrialization add support to the conclusion. Programs to control this exposure have dealt in the past with the water media, but are now moving toward a multi-media approach to address other potential sources of toxic pollutants. This movement toward a multi-media program has contributed to increased awareness, interest, and concern about air emissions and toxics deposition.

AIR TOXICS

Question: How is your air toxics program examining the potential contribution of air toxics to the problem and how is its work being integrated with other offices dedicated to reducing environmental and health risks in the Great Lakes Basin?

Answer: An air toxics emission inventory for the southeast Chicago area is being completed by Region V's Air and Radiation Division, with assistance from the Illinois Environmental Protection Agency and the Indiana Department of Environmental Management. This inventory will be used as the basis for developing an inventory of air toxics for all of the urbanized areas bordering on Lake Michigan. Another study is intended to characterize emissions in the trans-boundary area between the State of Michigan and the Province of Ontario. A modeling analysis will be undertaken to estimate the exposure of southeast Chicago residents to the emitted pollutants specifically originating from that area. Another analysis will be undertaken to estimate deposition of the toxics to Lake Michigan. The Michigan-Ontario study is also intended to characterize exposure and deposition in that area.

AIR QUALITY--BENZENE

Question: Recent news stories have indicated that you are considering using an "acceptable" risk standard for benzene air pollution from steel mills with a risk factor of 6 in 1000 cancer deaths for lifetime exposure. This level is far in excess of any standard that the Congress has contemplated or EPA uses in other programs. This high level of risk is especially troubling since it was always assumed that the hazardous air pollutant standard was the strictest standard the Agency used. Why are these high risks now acceptable?

Would it be prohibitively expensive to use the standards more commonly used by the Agency which are 100 to a 1,000 times safer? Were you influenced by the fact that you will soon have to write standards for coke oven emissions where control is even more expensive and you wanted to set a precedent?

In the recent benzene case the judge said EPA could not consider costs in setting health-based clean air standards yet the new level you are using for benzene looks very much like the cost-based standard which was thrown out. Can you explain?

Answer: The benzene reconsideration will be the first NESHAP action to be issued following the D.C. Circuit Court's remand of the vinyl chloride standard. The benzene decision and the rationale for the decision is explained completely in the attached memorandum to my staff. I want to emphasize that the decision, and in particular the designation of "acceptable risk," must be viewed strictly in the context of the two-step process prescribed by the court for making NESHAP decisions. This decision does not affect judgments on risk that must be made under other statutes. Moreover, the benzene decision was made exclusively on its own merits. It was not influenced by upcoming decisions on any other pollutants. Those decisions also will be made on a case-by-case basis depending on their own individual circumstances.

The benzene decision will be proposed in the Federal Register in June 1988, after which a public comment period will be held. Any final rules or decisions will be promulgated in December 1988.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 5 1988

THE ADMINISTRATOR

MEMORANDUM

SUBJECT: Proposed benzene NESHAP decisions and limitation of issue to Section 112 of the Clean Air Act

FROM: Administrator Lee M. Thomas

TO: Addressees

One of the most difficult decisions confronting the Agency is how to respond to the D.C. Circuit's opinion in the Vinyl Chloride case, in which the court remanded EPA's National Emissions Standard for Hazardous Air Pollutants (NESHAP) for vinyl chloride. The first NESHAP that will be issued after Vinyl Chloride is that for benzene. Over the past few months, I have received numerous detailed briefings on all aspects of the decision-making on benzene. After careful consideration, I have decided on a regulatory approach, which is summarized in the attached decision outline. I am directing the Assistant Administrator for Air and Radiation and his staff to incorporate this approach into a Federal Register notice that will serve as the vehicle for my proposed decision on reconsideration of the NESHAP.

In previous meetings and discussions, a number of representatives of other programs have expressed their concern that the decisions I reach regarding "acceptable" risk levels for NESHAPs will drive the decisions that other offices must make when they regulate risks. The General Counsel has advised me, however, that as a legal matter the decisions I make on "acceptable" risk for NESHAP purposes do not control judgments that I must make under other statutes that regulate risk. As a policy matter, for the reasons set out below, I see NESHAP judgments as unique and limited to the peculiar context of Section 112 of the Clean Air Act.

Section 112 requires the Administrator to establish standards at "the level which in his judgment provides an ample margin of safety to protect public health." Prior to the decision in the vinyl chloride case, judgments under this statutory prescription had generally been made in an integrated manner, considering a range of health, risk, and other factors, including costs and feasibility. As a result, the final decision did not separately weigh the factors in arriving at a judgment.

In its decision in the Vinyl Chloride case, however, the D.C. Circuit prescribed a two-step process under which the Administrator must first determine an acceptable risk or "safe" level based on consideration of health and risk factors alone, and then determine the level at which to set the standard in order to provide an "ample margin of safety." The second step, the ample margin of safety judgment which establishes the protection level of the standard, can include consideration of costs, feasibility, and other relevant factors.

The decisions that I have reached for proposal respecting "acceptable" risk levels for various categories of emissions of benzene follow this bifurcated approach in first considering health and risk factors, followed by consideration of costs, feasibility, and other relevant factors in establishing the final standards. What is really relevant is the protective nature of the standard, not some artificial construct for getting there that the court has imposed upon us. We should direct attention to where we end up, not how we were forced to get there. It is that final standard, not the interim step, that represents my judgment of what is necessary to protect the public health.

An option that I considered in identifying an "acceptable" level of risk -- the starting point for EPA's analysis under the Vinyl Chloride opinion -- was to establish a fixed risk target that would not be exceeded, such as a maximum permissible incidence or individual risk. Some contend that I should do so because other programs administered under other statutes have identified target ranges of risk.

I rejected this approach because of the unique requirements of the Clean Air Act, as interpreted by the D.C. Circuit. No other statute calls upon EPA to set standards using the two-stage approach mandated by the court for NESHAP decisions. EPA is prohibited from considering costs in the first stage -- the identification of an acceptable risk. But EPA is not required to ignore the fact that its baseline judgment of "acceptable risk" does not represent the final standard, and does not identify the risk to which the public will necessarily be exposed in fact. It is instead an artificial construct, a stage through which the Agency must pass in order to arrive at its final judgment, an emissions standard. Only the standard -- not the baseline "acceptable risk" judgment -- reflects the Agency's best judgment as to what level of exposure provides an "ample margin of safety" to protect the public health. Thus, when I find that a risk is "acceptable" for purposes of the required analysis under Section 112 of the Clean Air Act, I mean only that the risk is acceptable as a starting point for further analysis. The standard that I ultimately set must provide the statutorily mandated "ample margin of safety."

Each regulatory statute contains specific tests for regulatory action; none of these resemble the requirements of Section 112. Because of the unique features of the Clean Air Act's NESHAP provisions, I believe that no other statutory risk-based regulatory determinations provide an appropriate model for identifying "acceptable risk," and that NESHAP "acceptable risk" findings have little value in making risk judgments under other statutes, or even under other provisions of the Clean Air Act. Indeed, because I am free to issue rules that drive even lower those risks that I find "acceptable," it may sometimes be appropriate for an "acceptable" risk to be somewhat higher than the target risk ranges EPA has used when implementing statutes that do not provide for the second, more protective, step called for by the Vinyl Chloride opinion.

I know you and your staffs have spent considerable time, thought, and energy assisting me with this decision. I believe that the approach outlined in the attachment will provide for environmental protection as called for in Section 112 of the Act, as interpreted in the Vinyl Chloride decision. I also believe that for both legal and policy reasons, the decision is unique and you should view it only in the narrow context of Section 112.

ADDRESSEES:

Assistant Administrators
General Counsel

BENZENE REMAND

I. Process Used in Reconsideration

II. General Conclusions Regarding Policy for Section 112 Decisions

  A. General Conclusions

  B. Approach to Deciding Acceptable Risks

  C. Approach to Deciding Ample Margin of Safety

III. Specific Decisions - Acceptable Risks

IV. Specific Decisions - Ample Margin of Safety

I. PROCESS USED IN RECONSIDERATION

- The process was conducted as a re-examination of the available information and as an opportunity to make fresh decisions in light of the court's findings in the Vinyl Chloride case.
  - I want to emphasize that there were no preconceived notions that it was necessary to affirm the previous decisions nor were there any pre-decided positions.
- The actions were examined through a series of options and information briefings with representatives from throughout the Agency and culminating in a decision by me in a meeting with my senior advisors.
- All relevant information was considered to the degree appropriate:
  - for "acceptable risk" decisions
    - benzene hazard-leukemia and nonleukemia cancers and other effects
    - emission levels and estimated risk characterization
    - background exposures
    - uncertainties in the emissions, exposure, and risk estimates
  - for "ample margin of safety" decisions
    - technical feasibility of controls
    - potential health and other benefits of controls
    - control costs and economic impacts
- The decision on the emission standard for each source category —not the first step "acceptable risk" decision—is my best judgment as to what exposure provides an ample margin of safety to protect the public health.

II. GENERAL CONCLUSIONS REGARDING POLICY FOR SECTION 112 DECISIONS

A. General Considerations

- Each case must be decided on its own merits (i.e., case-by-case).
- There are no precise criteria or bright lines used in making decisions on individual cases; rather, I believe the individual facts of each case must be weighed together.
- Decisions should always be made in 2 separate steps.
  - — First, decide the level that represents an acceptable risk as a starting point for further analysis.
  - — Then, decide the level that provides an ample margin of safety to protect public health.
- I believe the Court's references to driving and breathing city air should not be viewed as quantitative guidance on acceptable risk levels; but, rather only as support for the position that this is not a risk free society.
- Furthermore, because everyday life is not risk free, I believe the appropriate judgment in the first step analysis is on the question, "What is an acceptable level of exposure and risk?" Not on "What is safe?"
- As a general approach, I am inclined to want to see risks in the range of 10-4 or less. When estimated risks exceed this, I believe it is important as a next step to look at the aggravating and mitigating factors.
- I recognize that there is considerable uncertainty in risk assessments.
- In this decision process, it is accepted that there may be situations where shutdowns result from the decisions.

B. Approach to Deciding Acceptable Risks

- As a method of approaching these decisions, it is appropriate to:

— Begin by considering:

(1) Maximum Exposed Individual (MEI)

(2) Incidence (In this, the greatest emphasis should be placed on incidence associated with lifetime risks of 10-5 and higher; incidence associated with populations exposed to lifetime risks of 10-6 or less should be given less weight because they are small and uncertain.)

(3) Background exposures and the associated health risks for an overall picture of relative contributions.

— Next consider any aggravating and mitigating circumstances, e.g.,

- Uncertainties
- Conservatism in risk characterization
- Nonquantified health effects (e.g., nonleukemia cancers)
- Modeled versus measured exposures
- Number of people estimated to be at lifetime risks >10-3, 10-4

C. Approach to Deciding Ample Margin of Safety

- As an approach to the ample margin decision, I would consider:
  - Technical feasibility of achieving lower risks
  - Cost effectiveness
  - Other benefits (e.g., co-control of VOC's, other health benefits)
  - Economic impacts
  - Does additional protection make sense?
    - For example, is this a wise use of society's or the Agency's resources?

III. SPECIFIC DECISIONS—ACCEPTABLE RISKS

Maleic Anhydride (MA)

- Since benzene is no longer used to manufacture MA, there are no health risks from benzene. Therefore, the question is moot.

Ethylbenzene and Styrene Process Vents

- The estimated MEI of 2 x 10-5 is within the 10-4 and lower range.
- The estimated annual incidence of 0.004 case/yr is low and most of the incidence (all but 0.0002 case/yr) is associated with lifetime risks of 10-6 and lower.
- Modeled exposures are comparable to (and less than) background exposures to benzene
- DECISION: Baseline risks are low and acceptable as a starting point for further analysis to reach a level for regulation that protects public health with an ample margin of safety.

Benzene Storage Tanks

- The estimated MEI of 4 x 10-5 to 4 x 10-4 is within the 10-4 and lower range.
  - the upper range of the MEI estimates is based on particularly conservative assumptions.
- The estimated annual incidence (0.05 to 0.1 case/yr) is low and
  - essentially all of the incidence (0.1 case/yr) is associated with lifetime risks of 10-6 or less;
  - only 0.004 case/yr is associated with lifetime risks of 1 x 10-5 and higher.
- Modeled exposures are comparable to background exposures to benzene
- DECISION: Baseline risks are low and acceptable as a starting point for further analysis to reach a level for regulation that protect public health with an ample margin of safety.

Benzene Equipment Leaks

- The estimated MEI of 1 x 10-3 falls slightly outside the 10-4 or lower range. Therefore, aggravating and mitigating factors were considered:
  - The overall weight of evidence for benzene carcinogenicity is strong. The risk estimates are based on human data.
  - The conservative nature of the linear nonthreshold model especially at the lower end of the extrapolations, noting that higher and lower estimates have been made by other risk models.
  - Non-leukemia cancers have not been modeled, but should be considered.
  - Exposure assumed to be continuous 24 hours per day for 70 years.
  - Modeled maximum exposures are two orders of magnitude below the lowest level associated with adverse health effects in occupational populations.
  - Emission estimates are uncertain and believed somewhat overstated.
  - Dispersion models for area sources of this type include additional uncertainties.
  - The estimate of 2 people at lifetime risks greater than 10-4 should not be viewed as precise but rather as likely an overestimate because
    - . of the conservatism of the emission estimates
    - . of the modeling uncertainties
- The estimated incidence of 0.3 case/yr is low, and
  - 0.26 out of 0.3 case/yr is associated with lifetime risks of 10-6 and lower.
  - Only 0.02 case/yr is associated with 10-5 risks and only 0.009 case/yr is associated with risks of 1 x 10-4 and greater.
- DECISION: Baseline risks are considered acceptable as a starting point for further analysis to reach a level for regulation that protects public health with an ample margin of safety.

Coke By-Product Plants

- The estimated MEI of 6 x 10-3 falls outside the 10-4 or less range.
- The estimated annual incidence is 3 cases/yr and
  - about one half (1.4 case/yr) occurs in population exposed at lifetime risks of 1 x 10-5 and higher.
- In light of these estimates, it is important to examine the aggravating and mitigating factors:
  - The overall weight of evidence for benzene carcinogenicity is strong. The risk estimates are based on human data.

- The maximum modeled exposure level is an order of magnitude below the lowest level associated with adverse health effects in occupational populations.
- The conservative nature of the linear nonthreshold model, especially at the lower end of the extrapolations, noting that higher and lower estimates have been made by other risk models.
- Non-leukemia cancers have not been modeled, but should be considered.
- Emission and exposure estimates are conservative and probably overstated. For example, these estimates are based on all plants operating at full capacity for 70 years. In fact, this is not the case now and the declining domestic coke market makes this very unlikely in the future.
- Dispersion models for area sources of this type include additional uncertainties.
- Majority of incidence (2 out of 3 case/yr) is associated with modeled exposures which are comparable to background.

° DECISION: After consideration of the risks and all the non-cost and non-technology factors, I concluded that risks at baseline are acceptable as a starting point for further analysis to reach a level for regulation that protects public health with an ample margin of safety.

IV. SPECIFIC DECISIONS—AMPLE MARGIN OF SAFETY

Ethylbenzene and Styrene Process Vents

° Baseline risks and incidence are small.

° Additional reductions are feasible; however, the reduction is small (MEI is reduced to 1 x 10-5 and the potential incidence reduction is 0.003 case/yr.)

° Additional feasible risk reduction is too small to warrant action under Section 112.

° DECISION: Baseline control provides an ample margin of safety. Additional control will not be required.

Benzene Storage Tanks

° Baseline risks and incidence are small.

° Additional emission and risk reduction is feasible; however, the reduction is small (MEI is reduced to 3 x 10-5 and the potential incidence reduction is only 0.07 case/yr). Essentially all reduction of the incidence is obtained from reductions to exposures at risks lower than 10-6.

° Additional risk reduction is too small to warrant action under Section 112.

° DECISION: Baseline control provides an ample margin of safety. Additional control will not be required.

Benzene Equipment Leaks

- Present baseline is the existing NESHAP (40 CFR 61, Subpart J).
- Additional emission and risk reduction is feasible.
- Control costs greatly exceed the small reduction in risks that is achievable.
- Recognizing the conservatism in the emission (and hence risk) estimates, the uncertainties in the MEI estimates and that the costs greatly exceed the risk reductions, baseline risk is considered to protect public health with an ample margin of safety.
- DECISION: Additional control beyond existing NESHAP will not be required.

Coke By-Product Plants

- Additional emission and risk reduction is feasible.
  - 80 to 98% reductions in incidence are feasible at cost of about 1 to 30 million $/yr
  - MEI can be reduced to 10-4
  - Number of people at higher risk levels can be reduced substantially
- DECISIONS: Select Option 3* as level of control that protects the public health with an ample margin of safety. This decision is based on consideration of:
  - With these controls, the MEI is reduced to 10-4 and the population at risk is substantially reduced.
  - Exposures are reduced such that only 0.035 case/yr are associated with population at risks of 1 x 10-5 and higher.
  - Majority of incidence is associated with exposures at risk levels of 10-6 and lower. These exposures are comparable to background exposures to benzene.
  - Control costs are reasonable considering the health protection and VOC emission reduction benefits.
- Options more restrictive than Option 3 were not recommended because additional reductions are not warranted considering the small risk reductions, the small additional VOC reductions, and the substantially greater control costs.

*Option 3 controls 24 of the 30 emission points; 7 of the 24 are controlled to a level less stringent than the maximum feasible control level.

PESTICIDES INDEMNIFICATION

Question: Under the indemnification provisions of the existing pesticides law the E.P.A. is required to pay money to pesticide manufacturers whose unsafe products are taken off the market. How much money did you pay out under this program last year and for what products?

Answer: During 1987, $36,252.42 was paid out for ethylene dibromide. The money was taken from reapportioned funds from FY 1985.

Question: Did the need to pay indemnities prevent you from taking actions you otherwise would have taken with regard to specific pesticides?

Answer: The potential indemnification costs have not been part of our decisions on whether or not to emergency suspend the use of any pesticide.

Question: Did your turn around on use of chlordane stocks result from the cost of indeminifcation?

Answer: EPA's position on the use of chlordane has not "turned around", nor was indemnification a significant issue in this case. EPA has recently acted to comply with a Federal Court order of February 23, 1988, which required the Agency to establish a termination date of April 15 for the sale and commercial use of existing stocks of chlordane products. However, the Agency did not believe such an action was necessary, and was prepared to accept the use of existing stocks until supplies were exhausted.

Under the current statute, indemnities are paid only when a pesticide is suspended due to an "imminent hazard" to health or the environment, and is subsequently cancelled. Since EPA did not suspend chlordane as an "imminent hazard", neither the Court Order, nor any EPA action has resulted in indemnity rights for chlordane registrants. At no time did EPA conclude that the available evidence warranted a suspension action on chlordane. Thus, EPA was prepared in the summer of 1987 to pursue a regular cancellation action, which allows for the continued use of existing stocks during the hearing process. In August 1987, an agreement with the manufacturer was reached which included an immediate halt to the further manufacture of chlordane for domestic use without an administrative hearing. EPA accepted that agreement as a more reasonable and timely way of removing chlordane from the marketplace than pursuing formal cancellation proceedings.

PESTICIDE CONTAMINATION OF GROUNDWATER

Question: Although you put increasing reliance on a labeling strategy in controlling pesticide contamination of groundwater and protection of endangered species, you are requesting only $8.7 million for this activity, the same as the current level. Why doesn't this program receive a relatively larger share of funds since the program is used for state enforcement assistance and means very little funds to states like Wisconsin which have serious groundwater problems?

Answer: The reference to $8.7 million is the total funding for the pesticide cooperative enforcement agreement program, which encompasses a great many enforcement functions and activities, including groundwater and endangered species protection. This program emphasizes use enforcement (within which falls the groundwater and endangered species protection efforts) over such other areas as compliance at pesticide producing facilities or in the marketplace, based on the expectation that use enforcement will produce the greatest environmental benefit. Within the $8.7 million total, the Agency believes that it has allocated funding appropriately, given the relative priority of controlling pesticide contamination of groundwater and protecting endangered species.

ACCUMULATING DATA BASES

Question: On page 29-30 of your budget submission it says that complete pesticides "data bases...are accumulating faster than they can be reviewed". This is the core of reregistration and the promise of health protection which we have been waiting for for 15 years. Why do you have this problem and how will you solve it?

Answer: The large number of studies generated by initial standards is essential to reregistration, but has created a backlog of unreviewed studies. The Agency realizes that this backlog could result in a substantial delay in recognizing possible adverse effects of pesticides that would become evident in review of these studies. We have, however, taken steps to minimize this effect. The initial standards are prepared in accordance with a cluster ranking system so that food use chemicals and those with the greatest volume of use are reviewed early in the program. As a result, we expect to complete reregistration of the more important pesticides in the first half of the process. In addition, we have established a process for identifying certain new studies for immediate review, based on concerns raised in the initial standard or the nature of certain findings. While the process is not perfect, it should reduce instances of important adverse effects going unrecognized for long periods. While these steps help mitigate the effects of the extended period for reregistration, an acceleration of the process, with fees that would cover the total cost, is also needed.

Working at a rate of 25 Registration Standards per year, and giving priority to food-use chemicals, the Agency has now completed over 175 initial Registration Standards which cover 85% of the total weight of pesticides used annually. In FY 1988 the Agency has shifted the reregistration program from accelerated, comprehensive data call-ins to the production of Final Regulatory Standards and Tolerance Reassessments (FRSTRs), including label and formulation changes on end-use products (FRSTRs with closure). This shift will permit EPA to address the complete data bases which have accumulated. This will result in faster environmental payoff and greater real world impacts from the reregistration program.

TOXIC SUBSTANCES RISKS

Question: On p.31 of your budget submission you say that you will be concentrating on PCBs, asbestos, formaldehyde and chlorinated solvents. This list has been the same throughout the 1980s. Why is it taking you so long to act on these risks and aren't there any new ones that deserve your attention?

Answer: Regulating existing chemicals has proven to take considerable effort. These chemicals are already widely used in society and have significant economic implications. EPA has made considerable progress with respect to asbestos. Our proposal in January 1986 to phase out the use of asbestos in the U.S. resulted in the Agency expending a considerable amount of time conducting cross examinations and allowing the maximum possible input from all concerned parties. As a result of this effort, EPA has updated its analysis of risks, costs and benefits to take into account changes that have occurred in the industry. Our schedule calls for finalizing that rule by December 1988. We believe that the asbestos rulemaking must be supported by a complete and extremely well documented record so that it will successfully withstand any challenges. In the long run, EPA believes this will be the most efficient way to bring about the implementation of a final rule.

Considerable progress has also been made with respect to chlorinated solvents. The nature of the solvents project was expanded from a focus on methylene chloride to consideration of four other solvents that may substitute for methylene chloride and potentially present similar or greater risks. In addition, the solvents project has also been coordinated with ozone depletion efforts. These enhancements in scope have greatly improved the usefulness of the effort. Option selection has already been conducted on the dry cleaning industry. The Agency intends to issue a National Emissions Standard for Hazardous Air Pollutants (NESHAP) to reduce risks from exposure to perchloroethylene. Options selection on metal cleaning will occur this fiscal year. At the current rate of progress, work should be completed on all solvents and use categories by early calendar year 1989.

The Agency is also moving toward a decision on the need for additional actions that may be necessary to address formaldehyde emissions into indoor environments such as homes and offices. EPA released a comprehensive risk assessment to the public during 1987 and risk management options are in preparation. The Agency is examining whether or not additional Federal regulations, beyond those already promulgated by HUD or beyond the voluntary standards approach being pursued by CPSC, are needed to deal with the problem.

The Agency is actively working on improvements to the PCB disposal permitting program. Proposed rulemakings will be issued this year to (1) establish notification and manifesting requirements for persons who handle wastes and (2) establish uniform procedures and criteria for the revocation of TSCA disposal permits. Similar improvements and modifications will continue to be addressed in the future.

A number of other existing chemicals are close to moving into the risk management stage. These chemicals may warrant actions under TSCA. Cancer risks of exposure to acrylamide were identified through testing conducted in response to the Interagency Testing Committee's recommendations. This information, along with the long known neurotoxicity of this chemical, led EPA to conduct exposure studies that revealed significant potential health risks to workers using acrylamide solutions in sewer grouting operations. EPA and OSHA are currently exploring what risk management actions should be initiated.

More recently, monitoring studies have revealed significant levels of chlorinated dioxin contaminants in bleached paper pulp used in a wide variety of paper products. Monitoring studies have also revealed the potential for releases of brominated dioxins and furans during processing of plastics resins containing brominated diphenyl ether flame retardants. EPA's Office of Toxic Substances is actively pursuing both of these situations to determine if significant risks are present and what risk management actions may be needed under TSCA.

CHEMICAL TESTING PROGRAM

Question: The budget contains decreases for developing TSCA test rules. By the beginning of 1989 there will be 33 test rules. But in 1984 the National Academy of Sciences said almost no commercial chemicals were completely environmentally tested. At this rate when will the chemicals testing program be completed?

Answer: Of the 60,000-plus chemicals in commerce referred to in the NAS report, probably only a few thousand merit testing. Many are large polymers that are not bio-available. Others are small volume specialty chemicals with negligible production and exposure. The screening method, used by the Interagency Testing Committee formed under TSCA to recommend chemicals for testing potential, focuses on chemicals that give rise to exposure from manufacturing, processing or use. These chemicals are being addressed by formal test rules or agreements issued under section 4 of TSCA. By the beginning of FY 1989, EPA will have issued 33 test rules and consent orders covering over 150 chemicals. The FY 1989 budget shows fewer test rules because (1) the ITC has recommended fewer chemicals recently; (2) EPA has issued consent orders for testing some ITC chemicals; (3) industry has, in some cases, voluntarily performed testing when faced with the prospect of a test rule; and (4) EPA is beginning, where appropriate, to issue multichemical test rules such as the referenced rule developed on 33 chemicals for the Office of Solid Waste. This single rule covers many chemicals. While somewhat fewer resources will be used in proposing and promulgating test rules, the resources needed to monitor ongoing test programs and review submitted test data will be increasing in the future.

The non-ITC test rules will generally deal with exposures from disposal and environmental release, areas in which the ITC has not previously had data to effectively screen chemicals. Testing of these chemicals will be addressed by EPA, ATSDR and NTP under Section 110 of the Superfund Amendments (SARA), using TSCA Section 4 testing authority where applicable. EPA also plans to pursue testing of chemicals shown by SARA Section 313 data to be released in substantial quantities. These three testing programs (ITC, SARA 110, and SARA 313) should address many existing chemicals of potential concern. It is impossible to predict the scope of these testing programs and how long it will take to complete them. However, chemical testing will never cease because new chemicals will enter the market and become existing chemicals potentially subject to Section 4.

BIOTECHNOLOGY REVIEWS

Question: On page 5 of your TSCA section it says that you will do 35-50 biotechnology reviews for fiscal year 1989, but you say later (pp. 18-9) that adequate methodologies don't exist to analyze this data and research funds are going down. How do you expect to do these reviews?

Answer: EPA is currently doing its assessments of biotechnology notices submitted for review under TSCA on a case-by-case basis. The research that has been carried out to date is beginning to assist our review of these notices. EPA believes that it will continue to perform case-by-case reviews for the near future due to the fact that this is an emerging technology subject in a relatively new regulatory program. EPA believes that sufficient information exists to continue this regulatory program in its current format for the present. However, developing a strong biotechnology research program is a priority for the Agency.

GREAT LAKES PROJECTS

Question: As cleanup of point sources of pollution and control of nutrient pollution gets underway, pollution from contaminated sediments becomes increasingly important -- both in the Great Lakes and nationwide. One of the Great Lakes National Program Office's major new responsibilities is to implement five pilot demonstration projects for cleanup of contaminated sediments. What is the status of the demonstration cleanups?

Answer: First, a slight clarification is needed. Section 118(c)(3) names five locations to get special consideration for the siting of demonstration projects, but does not limit the program to those five sites. We will make every effort to implement demonstrations of at least some technologies at each of the five sites. However, the final number and locations of the demonstration sites will be determined based on the match-up of the technologies to be demonstrated with site-specific characteristics, as well as the presence of complementary activities by other components of EPA or other Federal agencies, particularly the U.S. Army Corps of Engineers (COE).

The Great Lakes National Program Office (GLNPO) is currently laying the foundation for implementing this program. Because we believe that this program is a very high priority, GLNPO is forming a new branch specifically charged with implementing this program. GLNPO is in the midst of hiring staff for this new branch.

GLNPO has been working closely with EPA's Large Lakes Research Station in Grosse Ile, Michigan on the development of tests to assess the effects of contaminated sediments, as well as the development of a ranking scheme using the results of these tests to give an index of the severity of the contaminated sediment problem.

GLNPO has been working closely with the EPA Office of Marine and Estuarine Protection and the Office of Water Regulations and Standards on coordinating our Study and Demonstration Program with their activities in sediment assessment and criteria to eliminate duplication of effort and to develop sound guidance that can be applied nationwide.

Annex 14 of the Water Quality Agreement calls for international cooperation on developing assessment methods and remedial technologies for contaminated sediments and also calls for demonstrating these technologies. GLNPO has been working closely with other U.S. and Canadian agencies through direct contacts, as well as through the Sediment Subcommittee of the International Joint Commission on the development of testing methods and remedial technologies. The Sediment Subcommittee has already published a draft guidance document on sediment assessment and the selection of remedial options and is in the process of completing it. This groundwork will be very beneficial to the In-Place Pollutant Demonstration Program.

GLNPO has begun staff-level discussions with the COE offices in Chicago, Detroit, and Buffalo concerning how the objectives of the In-Place Demonstration Program could mesh with Corps dredging activities planned for Sheboygan, Wisconsin; Saginaw, Michigan; Indiana Harbor and the Grand Calumet River, Indiana; the Ashtabula River, Ohio; and the Buffalo River, New York. Due to the great costs of conducting technology demonstrations, the strategy is to take advantage of ongoing COE activities to the greatest extent possible in order to share some of the project costs. GLNPO will be calling a formal management level meeting with the Corps in the next few months to begin negotiating a major Interagency Agreement.

Under the current schedule for the Program, GLNPO will:

° establish its organizational structure by this summer and establish the formal coordination mechanisms with other organizations shortly thereafter,

° complete the assessment test protocols and severity ranking scheme by FY 1989,

° conduct pilot-scale demonstrations of promising remedial technologies by FY 1989,

° begin full-scale demonstrations in FY 1990 and continue these projects through FY 1991, and

° complete the final report of the In-Place Demonstration Program in FY 1992.

Question: Do you expect to complete the five demonstration projects within five years?

Answer: Yes, as you can see from the projected schedule in our answer to the previous question, assuming adequate staffing and funding near authorized levels, we have every intention of completing the demonstration program and issuing our final report on the program within five years.

Question: Under what authority will the cleanup of contaminated sediments occur?

Answer: As a preface to our answer, Section 118(c)(3) Program is not a cleanup program. However, the Program will develop and apply methods to assess the significance of contaminated bottom sediments as a cause of environmental degradation in a locale. This information could then be used to evaluate the need for actual cleanup. The Program will also study, demonstrate, and evaluate different remedial action alternatives which could then be used in actual cleanups.

One existing authority that is being used to address contaminated sediment cleanups is the Comprehensive Environmental Response, Compensation and Liability Act (Superfund). This authority is being used to address contaminated sediments in Commencement Bay in Puget Sound; New Bedford Harbor in New Bedford, Massachusetts; Waukegan Harbor, Illinois and Sheboygan Harbor, Wisconsin on Lake Michigan; Ashtabula Harbor, Ohio on Lake Erie; and others.

Another existing mechanism that could potentially be used for cleanups is the corrective action authority contained in the Resource Conservation and Recovery Act (RCRA), which could be used in cases where the sediment contamination is the result of discharges of hazardous constituents from solid waste management units.

Other authorities that could be used are Clean Water Act and Toxic Substances Control Act enforcement authorities which could be used to negotiate settlements including contaminated sediment cleanup.

Finally, Section 115 of the Clean Water Act provides the authority to work with the U.S. Army Corps of Engineers to contract for the removal and disposal of contaminated bottom sediments. However, the funding authorized is not adequate to carry out a cleanup program.

REVISIONS TO THE HAZARDOUS RANKING SYSTEM

Question: EPA is currently updating the hazardous ranking system which is used to assign numerical values to the risks uncontrolled hazardous waste sites pose to human health. Will the revised system consider the impacts of groundwater discharges to surface water and the impact of multiple exposure to toxics in surface water? For instance, will exposure to both contaminated fish and contaminated drinking water be considered at the same time?

Answer: During the revision of the Hazardous Ranking System (HRS), EPA is considering impacts resulting from ground water that actually discharges hazardous substances into surface water at detectable concentrations. The Agency is also concerned that discharges of contaminated ground water can be significant sources of hazardous substances in surface waters. EPA is also considering whether and how to address the impact of multiple exposure to toxics in surface water. However, until the regulation is published the Agency cannot comment on whether the HRS has been revised to incorporate these points.

Question: Will the International Joint Commission's "Areas of concern" be included as sensitive environments for the purpose of hazard ranking system scoring?

Answer: In revising the HRS, EPA considered including the International Joint Commission's "Areas of concern" among the sensitive environments that are evaluated. The Agency notes, however, that the "Areas of concern" are on a much larger scale, and that they are not really analogous to the sensitive environments addressed by the HRS.

Question: Does the Agency plan to reanalyze contaminated sediment sites both in the Great Lakes and nationally for inclusion on the NPL?

Answer: The Agency does not intend to systematically review sites that were scored below 28.5 on the existing HRS. However, if conditions warrant, such a site could be rescored using the revised HRS and listed on the NPL if the score was above the cutoff level for the revised HRS. It is important to note that the Agency has attempted to identify sources of contamination in order to determine the appropriateness of listing such sources and the areas of resulting contamination.

For example, the Agency would not include on the NPL a site that included contaminated sediments if the source of that contamination was excluded from being considered under CERCLA by statute.

GREAT LAKES WATER QUALITY AGREEMENT

Question: Last fall you joined your Canadian counterpart, Tom McMillan, in signing a revised Great Lakes Water Quality Agreement. I understand that a few of the tasks relating to sediment contamination and watershed management plans overlap with the mandate of the Great Lakes National Program Office. Could you explain how all these responsibilities are broken up between the Great Lakes National Program Office and other EPA offices?

Answer: Although there are areas in both the Great Lakes Water Quality Agreement with Canada and the Clean Water Act, including the 1987 amendments, which overlap, they only serve to reinforce each other.

The Great Lakes National Program Office coordinates with other EPA offices on contaminated sediments through an In-

Place Pollutants Task Force. This group is composed of staff from the Water, Waste Management, and Environmental Services Divisions, and the Office of Federal Activities. The Great Lakes Office also is coordinating with the Office of Research and Development and the Office of Water Regulations and Standards Criteria and Standards Division on the development of sediment criteria.

The Great Lakes Water Quality Agreement's requirement for Watershed Management Plan development is being integrated into both the EPA Regional Water Divisions' work plans and those of the eight Great Lakes States. The work plans are being integrated into each State's nonpoint source assessment called for by Section 319 of the Clean Water Act Amendments of 1987. This will assure both consistency with the Act and completion of the plans for implementing the Agreement.

Question: Will this ambitious workload require significantly increased funds and staff? You are requesting $9,400,000 for the Great Lakes Program in 1989. Will this level of funding be adequate to meet the new demands under the Great Lakes Water Quality Agreement along with those under the Clean Water Act in the timeframe outlined in the Agreement and the Act?

Answer: The FY 1988 budget for the Great Lakes National Program Office was significantly increased to meet the new responsibilities and requirements of the Clean Water Act and the Great Lakes Water Quality Agreement. The staff also was slightly increased.

The President's Budget request for the Great Lakes office for FY 1989 sustains the FY 1988 appropriation level. This recommendation provides $8,100,000 to be used to implement both the Agreement and the Act. The funds will be used for assistance agreements, contracts and interagency agreements with other Federal agencies. The request would also provide $1,300,000 to support 26 staff positions at the Great Lakes National Program Office.

This budget request is adequate to continue the initiatives begun in FY 1988, including the In-Place Pollution Demonstration Program and the Green Bay Mass Balance Study.

PESTICIDES -- PESTICIDES IN GROUND WATER SURVEY

Question: Now I would like to talk about the Pesticides in Ground-Water Survey, an item of concern to both myself and Chairman Boland, as you know. The objective of this survey is to determine the nature and extent of pesticide contamination in private and community drinking wells nationally.

You are requesting $1.8 million for the survey, $900,000 from the Office of Pesticides and $900,000 from the Office of Drinking Water. Last year the House and Senate added $1.5 million to EPA's request of $4 million for the survey. This was later dropped in conference. In responding to EPA's 1988 operating plan, Chairman Boland and I requested that a minimum of $3 million be devoted to this study in 1988.

Design of the Survey was begun in 1985 and a total of about $4.2 million has been spent on the design, as I understand it. What precisely has been accomplished to date?

Answer: Accomplishments to date include completing a statistical design for the Survey and conducting a pilot study in three States in FY 1987 to test components of the Survey in the field. Six major contracts, one implementation contract and five analytical contracts, have been awarded to assist EPA in conducting the Survey. Health Advisories summarizing toxicological data and other chemical-specific information have been developed for 62 pesticides included in the Survey and are available for use in the event pesticide contamination is detected. Six new multi-residue analytic methods to detect compounds of concern have been developed, undergone peer review, and are now ready for use. As the result of a screening study, conducted to characterize the hydrogeology in each county in the country, 90 counties have been selected where we will sample private wells. Lastly, we have developed and implemented an aggressive coordination program with the 50 States, the United States Geological Survey, the United States Department of Agriculture, environmental groups, industry and the public.

Question: I understand that no sampling has yet been done. The projected cost of implementing the Survey beginning in the current fiscal year and running to completion is $8.9 million. I assume this covers sampling and analysis, is that correct?

Answer: The projected cost of the National Pesticide Survey, beginning in FY 1988 and finishing in late FY 1990, is $8.9 million. This amount includes funding for the sampling and analysis, the selection of 750 domestic wells and 600 community systems to be sampled, the data entry and analysis, and the writing of the draft and final reports. In short, $8.9 million is the projected extramural cost to complete all aspects of the Survey.

Question: Although my staff was informed that the sampling was expected to be completed in 1990, I understand that the request of $1.8 million would not be adequate to allow this to happen. If the program is funded at $1.8 million, when do you expect sampling to be completed?

Answer: The Administrator has directed the Office of Drinking Water and the Office of Pesticides Programs to provide funding for the survey in 1989 in order to meet the scheduled 1990 completion date. Funds are being reprogrammed from other activities for this purpose.

Question: My staff was informed that sampling was to begin this spring, hopefully in April. Are you on schedule?

Answer: Sampling for the full National Pesticide Survey began as scheduled during April 1988 in Mississippi.

Question: I understand that other sources of funding are being investigated including the United States Geological Survey and the United States Department of Agriculture. What progress has been made in determining whether you could get funding from these sources?

Answer: EPA has met with officials of both the United States Geological Survey (USGS) and the United States Department of Agriculture (USDA). After extensive discussions with USGS, which focused on their collecting both samples at domestic wells and hydrogeological information near the wellhead, we reached the conclusion that, although there would be a small savings in cost to the Agency, the increased complexity of adding another set of sampling teams and their management to the National Pesticide Survey outweighed any advantages.

In the case of USDA, discussions are ongoing and no decisions have been made.

QUESTIONS SUBMITTED BY SENATOR LEAHY

METHANOL AND ACID RAIN PRECURSORS

Question: The 1988 Continuing Resolution appropriated $400,000 for studying the use of methanol as a means of reducing acid rain precursors from New England power generating plants. Can you tell me what EPA is doing to implement this project?

Answer: The Agency is working closely with the New England Governors Association to ensure that funding for the methanol project is provided as soon as possible. Representatives from EPA's Office of Research and Development and Grants Administration Division met on three different occasions (February 3, 11, and 23, 1988) with representatives of the New England Governors Association and a potential work subcontractor, Yankee Energy Corporation. The purpose of these meetings was to discuss funding mechanisms, grant procedures, and informational requirements for the project. The next step is for the New England Governors Association to submit a grant package (application) to the Agency for processing.

The grant package is expected within the next month. Once the package is reviewed and approved by the Agency, the study will be initiated.

CONSTRUCTION GRANTS

Question: President Reagan's FY 1989 Budget Proposal for the Clean Water Act's Construction Grants Program is $1.5 billion. The program is authorized for FY 1989 at $2.5 billion. Can you give me the most recent EPA estimate of the dollar amount of State need for sewage construction projects?

Answer: The 1986 Needs Survey (published February 10, 1987) estimated the wastewater treatment facility need for the current population to be $60.3 billion. Of this amount, $33.1 billion is for grant-eligible facility construction.

Question: How many of these would you rate as "high priority" projects that must be completed within the next three years, if States are not to risk penalties?

Answer: If high priority projects are defined as those which are not in compliance with final effluent limits, approximately 2,800 wastewater facilities with a total need of $15.5 billion would qualify. Of these high priority projects, 800 are large facilities with $13.0 billion in needs.

Question: Even if the program is funded at the full $2.5 billion authorization in FY 1989, can you tell me what funding options the States have for implementing sewer projects, after the Federal allocation is exhausted?

Answer: States would have the option of using low-interest, long-term loans provided through State revolving loan programs (which will be capitalized with Federal funds over the next five years), or pursuing private financing.

CLEAN LAKES PROGRAM

Question: The Clean Lakes base program, as authorized under Section 315(a) of the Water Quality Act of 1987, was zero-funded in the FY 1988 Continuing Resolution. Does EPA have a recent dollar estimate of the lake pollution funding needs of the States that could be addressed by the Clean Lakes Program?

Answer: We do not have a current estimate of States' needs for funding lake restoration/protection projects. In 1983 a preliminary estimate of needs for existing projects exceeded $30.0 million, excluding Lake Tahoe, California, which indicated a need of $40 million.

Question: If funds are appropriated for FY 1989, does the EPA have the capacity to administer a Clean Lakes base program of $15 million or more?

Answer: The Agency has not requested an appropriation of funds for this program; however, EPA currently has staff in both Headquarters and the Regions with responsibility to overview some 150 ongoing Clean Lakes projects. These staff would administer the award and oversight of additional Clean Lakes projects if funds were appropriated by Congress.

CLEAN LAKES DEMONSTRATION RESEARCH

Question: Also authorized under the Water Quality Act of 1987, Section 315(b), is a Clean Lakes Demonstration Program. This demonstration program, also zero-funded in FY 1988, designates ten lakes in six States as eligible for water quality improvement project funding. Does EPA have a current estimate of the funding requirements for these demonstration projects?

Answer: Total project costs have been estimated for five of the ten projects; they total approximately $33 to $40 million. These are very rough estimates, however, since only three of the ten projects have had diagnostic feasibility studes completed. These studies give a better estimate of the cost for implementing restoration or protection activities.

Question: If funds are appropriated for FY 1989, does EPA have the capacity to administer the program in that fiscal year?

Answer: The Agency has not requested an appropriation for the Demonstration Program, but if we received an appropriation, we would administer the program as effectively as possible.

SUPERFUND RESEARCH-NIEHS

Question: In FY 1988, the Congress provided $5.915 million for the Superfund basic research program at the National Institute of Environmental Health Science, out of an authorization of $10 million. What level of funding does the EPA support for the program in FY 1989, when the authorization is $20 million? If EPA does not support full, or close to full, funding for the program, how do you propose that the NIEHS provide critical information for those responsible for hazardous waste cleanup, regulatory agencies, health officials, and the general public?

Answer: For FY 89, the Agency has requested $15.9 million for NIEHS, $5.9 million of the total request will be used for basic research that will further our understanding of how exposure to hazardous substance and risk affect human health, in accordance with the Superfund Amendments and Reauthorization Act of 1986 (SARA). NIEHS will continue to perform critical biomedical research with initial emphasis on projects related to biomarkers (measures taken from biological samples that indicate organism susceptibility, exposure or effect through the detection of variations in cellular or biochemical components, processes, structure, or function). This basic research in engineering, hydrogeology, and analytical chemistry, will address the critical information needs of those responsible for hazardous waste cleanup, regulatory agencies, health officials and the general public in the future.

NIEHS and EPA both have carefully balanced the needs for basic research, applied research, and direct technical assistance in Superfund. In fact, EPA has significantly increased Superfund research funding (in excess of 10 percent) for its Office of Research and Development in the area of site assessment, more permanent clean-up technologies, and direct technical assistance to the user groups. The President's Budget of approximately $100 million for Superfund related research at the EPA, the Agency for Toxic Substance, and Disease Registry (ATSDR), and NIEHS in FY 89 is several times larger than the pre-SARA level. Thus, given the Agency's broad commitment to research, there is little reason to believe NIEHS will not be able to provide critical information for those responsible for hazardous wastes.

QUESTIONS SUBMITTED BY SENATOR LAUTENBERG

HOSPITAL WASTES

Question: What efforts has EPA undertaken to determine whether to regulate hospital or infectious wastes under Subtitle C of RCRA?

Answer: The Agency recognized the potential hazard of certain of these wastes and issued guidelines for proper management of infectious wastes, EPA Guide for Infectious Waste Management, in May 1986. The Agency worked closely with a number of professional organizations such as the American Hospital Association, in developing these guidelines. In November 1987, the Agency convened a panel of experts to further examine issues related to infectious waste management. The panel concluded that risks are mainly occupational, resulting from contact with contaminated needles and other sharps (e.g., scalpels, broken glass, etc.), and that sources for infectious waste include small quantity generators such as physicians' and dentists' offices. The Agency believes that risks related to infectious waste management can be effectively reduced through education.

Question: When do you plan to make a final determination?

Answer: The Agency has made infectious waste a priority in its solid waste management program, with a full-time staff person developing a strategy for determining the best ways to control infectious waste. The Agency plans to soon develop a Federal Register notice announcing our new emphasis on infectious waste and re-announcing the availability of the current guidance document. One of the issues to be addressed is whether infectious waste should be subject to a tracking system. As part of the control strategy, we plan to develop more educational materials to assist hospitals, small quantity generators and other handlers of infectious waste in better waste management controls.

GARBAGE WASH-UP

Question: What has EPA done to determine the cause of the garbage wash-up on New Jersey and Delaware Beaches last summer?

Answer: The Agency, in response to last summer's garbage wash-up on New Jersey beaches, has undertaken several studies and investigations. During 1987, EPA Region II performed inspections at the New York City Marine (Garbage) Transfer Stations (MTS) as well as at the Fresh Kills Landfill in order to determine whether such operations were contributing to the presence of floating garbage in violation of the Clean Water Act. The Region participated in Civil and Criminal Investigations to determine the source of any illegal dumping that contributed to the garbage wash-up onto New Jersey beaches. The U.S. Attorney is coordinating the criminal investigation. EPA and the New Jersey Attorney General agreed that New Jersey would pursue the civil action which resulted in the entry of the Consent Decree between the City of New York and the State of New Jersey for extensive improvements in operations to eliminate the entry of garbage to the waters of the New York Bight. In addition to the site investigation, the Region conducted aerial surveys of the Bight area which confirmed the impact of the Fresh Kills garbage unloading operations on the problem as well as the contributions of other sites of lesser magnitude. A Region II sponsored study of the potential for floatable debris released in the Harbor area making its way to area beaches and a subsequent study of the impact of Combined Sewer Overflows have also been undertaken.

Question: What do you think were the major causes of this wash-up?

Answer: In addition to a possible illegal dumping act, still under investigation, we believe that a series of events contributed to the wash-ups. Sources of floatable debris include land-based sources such as active landfills, transfer stations, combined sewer overflows, storm sewers and various non-point sources such as beach litter. Deteriorating piers and derelict vessels also contribute heavily to floating wood that is also a problem. Much of this material becomes resuspended during high tides and gets redeposited at other locations. In addition, recreational, commercial and military vessels as well as commercial sea-based activities are also responsible for unquantified contributions. The fate of the debris is determined by meteorological and oceanographic conditions which may combine to cause beach wash-ups.

Question: What is EPA doing to address these problems?

Answer: Based upon the Region's findings regarding the sources of floatable debris, a surveillance plan has been developed with the States of New Jersey and New York which calls for increased monitoring of the New York and New Jersey shores and the New York Bight via aerial and sea-based vehicles. This surveillance is intended to both identify sources of unlawful discharges of debris and facilitate the ability of local authorities to protect beaches from wash-ups. Enforcement actions will be coordinated with the State agencies where appropriate.

Question: Are there any increases in this year's budget to address this situation?

Answer: The FY 1988 budget includes resources for EPA to study the marine debris problem in the New York Bight area and elsewhere. The FY 1988 and 1989 budgets also include resources to support development of the New York Bight Restoration Plan.

FRESH KILLS

Question: Are the garbage transfer operations in New York City, which discharge garbage into the water, in violation of the Clean Water Act (CWA) and RCRA?

Answer: Any discharge of pollutants, including garbage, from a point source to the waters of the United States in the absence of a National Pollutant Discharge Elimination System (NPDES) permit to do so is a violation of the CWA. This provided a legal basis for the Consent Decree between the City of New York and the State of New Jersey requiring measures to prevent debris from entering the water. Discharging garbage into surface water constitutes open dumping and is in violation of RCRA. However, these provisions of RCRA are administered by the States and are not Federally enforceable.

Question: Why haven't you taken any enforcement action against these facilities?

Answer: Working in cooperation with the New Jersey Attorney General's office it was mutually agreed that the United States Environmental Protection Agency would not initiate a separate civil court action relative to the wash-ups and would defer to the consent agreement activity between New Jersey and New York City. This decision resulted in the two parties reaching an agreement in an expedited manner. The Region had undertaken the previously described program of inspections in preparation for enforcement prior to the beach wash-ups and contributed to the joint investigation of civil and/or criminal violations.

Question: Earlier this year EPA acted to require New York City to develop a plan to control leachate from the landfill. The effect of this action was to prohibit New Jersey from bringing a lawsuit against New York City for its discharge. Why were you so quick to act on the leachate problem after New Jersey announced its intention to bring a lawsuit while you've taken no action to address the garbage problem?

Answer: The Region was not notified of New Jersey's intention to bring a lawsuit against the City of New York for the discharge of leachate from the landfill prior to our administrative enforcement action. Our action does not prohibit the State of New Jersey from filing a separate action under Section 505 of the Clean Water Act. The sequence of events which lead to EPA's action is as follows. After EPA's inspection of the landfill in June 1987, a sampling of the leachate was scheduled for purposes of enforcement action support. The sampling was carried out in December 1987. The Region had intended an enforcement action, following the June 1987 inspection, to address both the problems of floatable debris and leachate. Based upon the settlement and resultant Consent Decree between the State and the City to address the floatables concerns, EPA confined its action to addressing the leachate problems. The EPA enforcement action of January 1988 closely followed receipt of the results of the sampling inspection of December 1987. This action was deemed necessary due to the absence of an agreement either by permit or enforcement of a leachate control program between New York State and New York City.

ILLEGAL DUMPING OF GARBAGE

Question: How many enforcement actions has EPA brought under the Ocean Dumping Act since its passage 16 years ago?

Answer: Based on information contained in annual EPA reports on Ocean Dumping Act administration required by Section 112 of the Act, there have been approximately 88 civil enforcement actions since 1973.

Question: How many of these came from Region II?

Answer: During the past 16 years, EPA Region II has taken 71 administrative enforcement actions against illegal dumping and for violation of ocean dumping permit conditions. It should be noted that none of these actions involved the dumping of garbage (either permitted or unpermitted) in the New York Bight.

In general, these enforcement actions have been based on three types of violations: schedule of compliance slippage, dumping outside of the designated dump site, and reporting violations. For example, the City of Glen Cove violated its schedule to phase-out ocean dumping. EPA issued a final Order-on-Consent giving the City a new phase-out date and assessing the City $10,000 with an additional $40,000 in suspended penalties if the City missed the new phaseout date. Most recently, an action against Weeks Stevador Company Inc. included charges that wood fell off of the barge outside of the dump site. For the violation, a $26,000 fine was imposed. The new permit has significantly stricter requirements to ensure against wood falling overboard in the future.

Question: Have you imposed any monetary penalties for violations of the Ocean Dumping Act?

Answer: Yes, Region II has imposed monetary penalties as a result of its enforcement actions. A total of $289,380 was assessed in 23 of the enforcement actions. Of this amount, $185,380 was collected, $70,000 was suspended, $10,000 was forgiven as a credit, and $25,000 was never collected because the company dissolved and had no assets.

Question: Were any of these actions for dumping without a permit?

Answer: Yes, in 1977 Region II took an enforcement action against a company for ocean dumping 2,200 cases of canned beer in the waters off of the United States Virgin Islands without an EPA authorized permit.

OCEAN DUMPING OF SEWAGE SLUDGE

Question: What is EPA doing to end ocean dumping by the nine remaining dumpers?

Answer: All four applications, covering nine municipalities that ocean dump sewage sludge, were reviewed and found to be deficient. The greatest deficiency in each lay in the analysis of land-based alternative sludge disposal methods. EPA sent letters to each municipality on November 16, 1987, advising them of the deficiencies. EPA Region II has met with each of them since that time. In response, the municipalities have submitted additional materials and EPA is reviewing the applications.

Under the Marine Protection, Research and Sanctuaries Act, applicants must demonstrate a need for ocean dumping and address locations and methods of disposal or recycling, including the probable impact of using such alternative locations or method. If EPA determines that an alternative is better than ocean dumping, EPA will require that alternative to be implemented. When an applicant has not examined other disposal methods and their impacts, EPA will consider the application incomplete and will not grant a permit until the applicant does examine them in a satisfactory manner.

PLASTIC POLLUTION

Question: Under the Plastic Pollution Control Legislation enacted last year, EPA and NOAA are required to establish a public education program by April 1, 1988. What has EPA done to implement this requirement?

Answer: NOAA has taken the lead in developing a public education program on marine debris. NOAA, EPA, Department of Transportation/Coast Guard, and Department of Interior (DOI) are working together to support a national ad campaign on marine debris. The campaign, to be done by the Ad Council probably through DOI's Take Pride in America program, is being developed jointly with the Center for Environmental Education and the Society for Plastic Industry.

FY 1989 CARRYOVER

Question: Your '89 Superfund request assumes a $100 million carryover from '88. With almost 1000 sites on the NPL, we assume the needs already exist for this money.

Does this failure to get available funds where they're needed suggest inefficiencies in the program? How much of this carryover is attributable to expected failures by EPA Regional Offices to obligate requested funds? Indicate the amount of carryover attributable to each Region.

Answer: Although we currently anticipate approximately $100 million in carryover from 1988, this estimate is based solely on historical trends. Consequently, the amount of carryover attributable to each Region is not available. Our operating plan does not explicitly reserve $100 million for 1989. However, we have traditionally experienced some carryover in the Superfund program primarily because of the complexity of the remedial projects themselves and the need to make cost estimates for budget purposes well in advance of actual start dates. We anticipate this will continue to be the case in 1988.

Our original site estimates for 1988 were made in November of 1986. This means some estimates had to be made even before the remedy was selected for a site. These estimates are then updated on a quarterly basis as the projects progress. It is normal that start dates shift and cost estimates become more accurate as we get closer to implementing the remedy. In addition, some projects originally planned to be Fund-financed are later taken over by responsible parties. Finally, our remedies are also affected by State readiness, community involvement, and the contracting process.

The fact that we may have $100 million in carryover does not suggest failures or inefficiencies in the system. We are providing the appropriate amount of funds needed to ensure the remedial pipeline progresses without interruption.

Question: How do you justify such carryovers given that this is the third year of the reauthorized program and that EPA had many years of experience with the previously authorized program? Are headquarters and regional offices moving as efficiently as they can to ready sites for remedial funding and activity?

Answer: As stated in response to your previous question, our estimate of carryover available into 1989 is based on historic trends in the execution of Superfund. We are not specifically reserving carryover for 1989. We will be pursuing the full implementation of our program objectives in 1988 and will carryover only those resources that are, in fact, unobligated at the end of the fiscal year.

We believe the Superfund program is moving as efficiently as possible given the statutory requirements we must meet. We have gained valuable experience in implementing new SARA requirements over the past year and as a result, we have begun to streamline the cleanup process.

Most efforts in streamlining the process focus on performing more extensive evaluation work upfront to better define the problem, encouraging interim actions at NPL sites, focusing on alternatives early in the process, reducing project planning timeframes, and encouraging early consensus building among all interested parties. During the final cleanup phases, we will implement alternative contracting strategies to encourage competition and provide award for high contractor performance. Finally, the enforcement program will expand the use of mixed funding agreements and de minimis concepts in approaching responsible parties, and continue to improve the settlement and negotiations processes.

PAST SUPERFUND DEADLINES

Question: Which deadlines mandated by the Superfund Amendments of 1986 have not been met by EPA or other applicable agencies since enactment of the 1986 amendments?

Answer: The following SARA mandated deadlines were not met:

1) The Annual Superfund Report authorized under CERCLA §301(h)(1) and due to Congress on January 1, 1988, is expected to be completed by June, 1988.

2) The CERCLA §126(c) report on the extent of hazardous waste sites on Indian Lands, required to be submitted with the FY 1988 President's Budget, was signed and submitted on November 6, 1987.

FUTURE SUPERFUND DEADLINES

Question: Which, if any deadlines mandated by the Superfund Amendments of 1986 are expected not to be met by either EPA or other involved agencies in FY 88 and FY 89?

Answer: We anticipate that the following deadlines will not be met:

1) CERCLA §105(c)(1) requires that EPA revise its current Hazard Ranking System (HRS). The deadline to complete this revision is April 17, 1988. We anticipate that the new system will be proposed by July, 1988 and final by January, 1989.

2) Revision to the National Contingency Plan (NCP) is required under CERCLA §105(b) on or before April 17, 1988. The revised NCP is expected to be final by May, 1989.

3) CERCLA §102(a) requires that EPA promulgate final regulations establishing reportable quantities (RQs), not later than April 30, 1988, for those hazardous substances that have not had RQs published in the CFR on or before March 1, 1986. Final regulations establishing reportable quantities for these substances are expected to be complete by August, 1988.

4) CERCLA §120(d) requires EPA to "take steps to assure" preliminary assessments are conducted for each facility on the docket by April 17, 1988. EPA has worked with other Federal agencies throughout 1987, culminating in the issuance of final guidance on Section 120 Requirements for Federal Agency Preremedial Activities on September 8, 1987. Training for agencies on the

implementation of this guidance was held on September 25. Based on communications with Federal agencies, it is not clear whether all agencies will meet this deadline.

5) Section 120(d) also requires that EPA evaluate docket facilities and include them on the NPL, where appropriate, by April 17, 1988. The Federal Facilities docket was established January 12, 1987. Due to revisions to the Hazard Ranking System which are required by Section 105(c)(1), we do not expect to meet this deadline.

6) Section 120(h)(2) requires that EPA promulgate property transfer notice regulations by April 17, 1988. These regulations were proposed on January 13, 1988; however, we do not expect to promulgate the final regulations until early summer.

FY 1989 OMB SUPERFUND BUDGET SUBMISSION

Question: How much did EPA propose for Superfund funding prior to OMB review? Break this answer down for each element of the program, including but not limited to enforcement, removal, and remedial funding. For each element provide the amount requested prior to OMB review to the amount in the FY 89 Budget request.

Answer: The 1989 OMB Request was for $1,849,000,000 for Superfund. Major categories of this request are:

	OMB Request	President's Request
Research and Development	$70.5	$66.6
Enforcement	$134.0	$131.5
Management and Support	$102.7	$96.3
Response	$1,541.8	$1,305.6
RI/FS	(80.4)	(80.4)
Remedial Design	(44.3)	(44.3)
Remedial Action	(795.0)	(595.0)
Removal Action	(90.2)	(90.2)
Total	$1,849.0	$1,600.0

ANNUAL REPORT TO CONGRESS

Question: When will Congress receive the annually mandated Superfund Report? What is the status of the Report, and why has it not been sent to Congress to date?

Answer: The schedule is to deliver the EPA Report to Congress on Superfund Implementation Progress in Fiscal 1987 sometime early in June 1988. The Report is being prepared for the EPA Red Border Review, which is scheduled to begin March 24. EPA did not meet the January 1, 1988, deadline for the following reasons:

1. Data Availability. Information required to be included in the Report became available at different times following the close of the fiscal year, e.g., Superfund progress measures (November), site feasibility studies (FS) and Record of Decision (ROD) documents (December), financial and budget data, and information from other Federal departments and agencies.

2. Required Multiple Reviews. After being completed by the Office of Emergency and Remedial Response, the Report must undergo EPA Red Border Review, an interagency review and OMB review. The EPA Office of the Inspector General must complete the audit report required by CERCLA Section 301(h)(2). Also, an Interagency Report Control Number had to be obtained from GSA to request and collect needed information from other Federal departments and agencies.

The Report will contain information required by CERCLA Section 301(h) (1) paragraphs (A) through (G) on EPA's progress in implementing CERCLA, as amended by SARA. The Report does not include information on other non-CERCLA SARA provisions, e.g., Title III or the Radon/Indoor Air Program (Title IV).

SUPERFUND BREAKDOWN OF SITE REMEDIATION ACTIVITIES

Question: Please provide for FY 1989 and all prior years of the Superfund program the percentage of resources--by FTEs and dollars--attributable to actual site remediation. Include in this response the definition EPA uses for site remediation.

Answer: We are providing the percentage of FTEs and dollars attributable to site remediation for 1986 through 1989. We are currently compiling the historic data necessary to respond and will provide that information when it is available.

We have assumed a conservative definition of site remediation and include only the major Response and Enforcement remedial and removal activities. These activities are remedial investigation/feasibility study (RI/FS), remedial design (RD), remedial action (RA), operations and maintenance, removal actions and laboratory analysis. Not included are activities such as: research and development remediation work, direct site management and support, direct site support from other Federal agencies, pre-remedial and pre-removal activities, and other response support provided at specific sites.

PERCENT OF SITE REMEDIATION

	1986	1987	1988	1989
DOLLARS	48%	55%	60%	62%
FTE	30%	29%	28%	29%

FY 1989 SUPERFUND GENERAL REVENUES

Question: How much general revenues are assumed in the FY 89 Superfund request? How does this compare to FY 87 and FY 88?

Answer: General revenues for Superfund are not requested in 1989. We believe that general revenues are not needed in 1989, but may be required in the future to balance budget authority with revenues available from taxes and cost recoveries. General revenues were not needed to meet program needs in 1987 and 1988, and were not requested by the President. However, in 1988 the Congress did provide $239,100,000 in general revenues.

TITLE III ENFORCEMENT

Question: The Budget Justification suggests that EPA expects about 300,000 Title III emissions inventory reports in 1988. Title III increases the number of covered facilities and reports in 1989.

But your Toxics budget holds Title III enforcement manpower constant at 11 FTEs. How can so few staff assure that hundreds of thousands of emissions reporting forms have been filled out correctly? Can so few enforce a national program of this magnitude?

Answer: While the federal FTE level requested in the 1989 budget remains at 11 FTEs, there is an additional request for $1.1 million in extramural funding for Title III inspections, through a grant with the American Association of Retired Persons (AARP). In addition, EPA will integrate certain other inspections routinely conducted under sections 5 and 8 of the Toxic Substances Control Act (TSCA) with Title III inspections, since many of the same facilities will be subject to both types of inspections.

EPA believes that the additional resources realized through contract inspectors and integrated TSCA-Title III inspections will provide an adequate Title III enforcement program in 1989.

TITLE III EMISSIONS INVENTORY

Question: When will the information from the section 313 reports be publicly available?

Answer: The Agency expects the Section 313 computerized data base to be ready for public access by Spring of 1989.

Question: How will public availability be achieved?

Answer: Public availability of the data base will be achieved primarily by accessing the computerized public database. The agency will also make available reports summarizing the data. We are presently investigating options available to the Agency for making the data available to the public.

Question: What type of publicly available data base will be used?

Answer: EPA has tentatively selected the National Library of Medicine (NLM) as the primary means of data base access.

Question: What, if any costs, will be associated with accessing this data base?

Answer: The cost to the public of accessing the public data base will depend on the data base access option chosen by the Agency. For example, if the Agency goes with NLM, the cost could be as low as $18 per connecting hour. NLM currently charges users of their data bases $18 to $25 per connecting hour, this being their standard fee range.

Question: What arrangement will be made for those who cannot afford to pay costs, if any, of accessing the section 313 data base?

Answer: EPA is currently developing a fee waiver and fee reduction policy with respect to public online access to the data.

TITLE III EMISSIONS INVENTORY

Question: How many section 313 reports are expected in FY 89? Please indicate your basis for this response.

Answer: The Agency estimates that the maximum number of facilities subject to the reporting requirements is 31,800. Overall a maximum of 300,000 reports will be submitted to the Agency as a result of reporting by these covered facilities. The method used to develop this estimate of the number of forms and facilities is based on a survey of industrial facilities.

TITLE III EMISSIONS INVENTORY

Question: Is any Title III funding being used currently to study the anticipated reaction of citizens to section 313 emissions information? If so provide the amount used for this purpose since enactment of Title III, with a breakdown by fiscal year, and explain why EPA deems this to be an appropriate use of Title III funds.

Answer: The Office of Toxic Substances has reprogrammed some FY 1988 funds to prepare for the anticipated reaction of citizens to Section 313 information. Approximately $450,000 has been committed to three projects:

- establishment of a pilot community study to test whether certain EPA analytic tools help citizens and local officials interpret the data in ways they find useful ($200,000);
- Convening of 15 focus groups to assess the level of knowledge about toxic substances, exposure, assessment of risk in order to develop useful EPA information material ($180,000);
- convening of a group of environmental, industry and government representativies to discuss selected aspects of the Section 313 program ($70,000).

EPA believes it is necessary to conduct these activities because of its obligation to help people interpret responsibly the information reported under Section 313. These activities will help the Agency refine existing information and analytic tools which will help the public use the Section 313 data.

TITLE III FUNDING

Question: How much was requested by EPA in FY 89 for Title III prior to OMB review? Describe the request by activity, indicating the EPA request and the OMB approved amount. Indicate what activities could have been accomplished, which will not be accomplished due to the OMB reductions.

Answer: The FY 1989 OMB Submission and the Congressional budget request for Title III are described by activity below:

OSWER

The FY 1989 OMB Submission included 34.0 FTE and $5,027,700 total dollars for community right-to-know, emergency planning and related OSWER activities. The FY 1989 Congressional budget request includes 28.0 FTE and $4,416,700 total dollars. As a result, emergency response plan development, training, technical assistance, and enforcement actions will have limited growth.

OPTS

The FY 1989 OMB Submission included 56.5 FTE and $12,662,900 total dollars for emissions inventory forms processing and data quality control, modeling tools and pilot State programs, and technical support to OSWER. The OMB submission also included 19.0 FTE and $3,824,800 for OPTS Title III enforcement. The FY 1989 Congressional budget request includes 37.4 FTE and $9,996,900 total dollars for emissions inventory work, and 11.0 FTE and $2,042,300 total dollars for enforcement. This represents an increase of 2.9 FTE and $3,318,800 total dollars over 1988 which will provide computer support and a grant for inspections of facilities and enable the processing of data reporting forms.

These resource levels have an impact in two areas: (1) forms processing and quality control, and (2) the ability to educate and inform the public about the toxic release data and how to use it.

The lower level will reduce EPA's ability to conduct detailed audits of the current projected number of report forms (300,000). In addition, EPA will need to delay development of modeling tools for State and local governments, and will not provide pilot cooperative agreements that would help these entities answer citizens' questions about the implications of the data.

EPA will be concentrating on forms processing. To the extent the reporting levels projected are not reached, resources will be used to enhance quality control of the data.

OARM

The FY 1989 OMB Submission included 3.0 FTE and $500,000 in extramural dollars for Administrative Management, and $1,149,000 in intramural dollars for ADP Support. The FY 1989 Congressional budget request includes 2.7 FTE and $500,000 in extramural dollars for Administrative Management, and $825,000 in intramural dollars for ADP support.

The resources for Administrative Management provide support for the implementation, operation and enhancement of information systems supporting emergency planning and notification, the Toxic Chemical Release Inventory, and the trade secrets provisions. The slight reduction from the OMB submission will not adversely affect the support effort.

The resources for ADP Support provide central processing unit capacity, telecommunication, disk storage, and operational support. Because the Agency invested 1987 end-of-year resources into mainframe and telecommunications capacity, and disk storage, the reduction from the OMB Submission will not adversely affect program support. The 1989 Congressional budget request maintains support for the ADP Support functions.

ORD

The FY 1989 OMB Submission included 3.0 FTE and $885,000 total dollars for Scientific Assessment (inputting Title III chemical inventory and release data into ORD's Integrated Risk Information System (IRIS), Monitoring (providing validated sampling and analytical methods to support environmental exposure monitoring investigations of chemical releases), and Health Effects (modeling methods).

Although the 1989 budget request for ORD does not outline resources specifically for Title III, a number of related activities are being accomplished within the base program.

OPPE

The FY 1989 OMB Submission included a request for 3.3 FTE to provide assistance to program offices on information collection requests and on implementing and evaluating strategies for making information available at the State and local levels, to assist State and local emergency planning commissions in managing the information they collect, and for the statistical design of surveys.

The FY 1989 President's Budget will focus OPPE resources on the processing of information collection requests.

OGC

The total FY 1989 OMB Submission for the Office of General Council was 131.7 FTE, an increase of 6.2 FTE over 1988. Just a fraction of this increase was for increased Freedom of Information Act (FOIA) requests and resultant FOIA appeals related to Title III trade secret activities. The 1989 budget request for OGC is for 125.5 FTE, the same as the 1988 Operating Plan. The level funding is not expected to adversely impact Title III work unless FOIA activity increases dramatically.

TITLE III IMPLEMENTATION COSTS

Question: What does EPA estimate to be the 1989 dollar funding needs for state and local implementation of the Title III program?

Answer: EPA estimates the total state and local implementation costs for Title III in 1989 to be approximately $57,000,000. This estimate is derived from four Regulatory Impact Analyses (RIAs) that were developed in support of Title III rulemakings. It includes costs for state emergency response commissions, local emergency planning committees and fire departments. This estimate reflects a consolidation of the cost categories shared across each of the RIAs and consequently represents total program cost estimates that are both lower and more accurate than those cited in the individual RIAs. The Agency plans to finalize its study of the costs contained in the RIAs in the near future.

It should be noted that this estimate is based on timely completion of planned 1988 activities. A significant portion of the 1988 estimated costs of approximately $128,500,000 for state and local implementation of Title III could be deferred until 1989, should significant delays occur.

TITLE III ENFORCEMENT RESOURCES

Question: What are the '89 enforcement resources for all of Title III in the aggregate and broken down for each provision of Title III and for each EPA office? How does this compare to FY 87 and FY 88?

Answer: The 1989 budget request includes a total of $2,424,300 supported by 15 total workyears for Title III enforcement. In addition, the Agency plans to coordinate enforcement of Title III Section 304 with CERCLA Section 103(a), since the reporting of chemical releases under these Sections is complementary. Following is a breakdown by EPA office, Title III provision and fiscal year.

(Dollars in Thousands)

	FY-87		FY-88		FY-89	
EPA Office	FTE	TOT$	FTE	TOT$	FTE	TOT$
OTS (§313)	-	-	11	$524.0	11	$2,042.3
OSWER (§§302,303, 304,311,312)	-	-	-	-	4	382.0
TOTAL	-	-	11	$524.0	15	$2,424.3

COMPLIANCE RATE FOR TITLE III

Question: What is the estimated compliance rate for each of the provisions of Title III? State the basis for the estimate in your answer. Include in this response information on state compliance, including but not limited to any states that have failed to establish state emergency response commissions and states where local emergency planning committees have either not been formed or fully staffed.

Answer: The compliance rates noted here represent results from an Agency survey conducted in the Regions during January 1988. These results are preliminary estimates and do not represent actual systematic monitoring. The descriptions for each Section note only those activities entailing quantifiable compliance.

Section 301 - Establishment of State Emergency Response Commissions (SERC) and Local Emergency Planning Committees (LEPC): All 50 States, Puerto Rico (PR), the Virgin Islands (VI) and the District of Columbia (DC) have established their SERC. Out of the 42 States responding to this section, plus PR and VI, 3,555 LEPC are named and 2,162 (61%) are presently functioning.

Section 302 - Facilities using, storing, or producing extremely hazardous substances in excess of the chemical-specific threshold planning quantity must notify the SERC: The Agency has estimated a universe of 100,000 facilities. In 48 States, PR and VI, a total of 37,000 facilities have notified the SERC of their production or use of extremely hazardous substances making an estimated national compliance rate of roughly 40%.

Section 303 - Development of emergency response plans by LEPC; facilities notifying LEPC under Section 302 must name a representative to the LEPC for the planning process: Based on the 26 States with estimates of the number of emergency plans to be completed by October 1988, between 50% and 100% of the plans should be available by the deadline. However, actual quality of such plans is a serious program concern. Most States predicted compliance levels of 80% to 100% for facilities naming representatives to the LEPC.

Section 304 - Facilities with releases of extremely hazardous substances in excess of the reportable quantity must notify the National Response Center (NRC), the SERC and the LEPC: Many States have reported establishment of release notification centers, and reports have been received by these centers. Individual States have received up to 25 reports. At this stage, EPA cannot gauge the compliance rate these occasional reports indicate.

Section 311 - Submission of Material Safety Data Sheets or lists by facilities with reportable chemicals: The first deadline under Section 311 passed in October 1987 so little compliance data is available. Of those 15 States estimating compliance rates, the figures ranged from 5% to 80%. On average, 30-35% may be a more accurate indication.

Section 312 - Submission of annual inventory report by facilities with reportable chemicals: It is too early to estimate compliance rates on the recently passed March 1, 1988 deadline for manufacturers under Section 312.

Section 313 - Notification to EPA by certain manufacturers with emissions of toxic chemicals: To date, no deadlines have passed. Accordingly, compliance rates cannot be calculated.

Sections 322-323 - Submissions of trade secret claims under emergency planning, community right-to-know, and toxic release reporting provisions: Since submitting a trade secret claim is voluntary, compliance rates are inapplicable.

SUPERFUND TECHNICAL ASSISTANCE GRANTS PROGRAM

Question: How many FTEs and dollars are assumed in the '89 request for the Superfund Technical Assistance Grants program? What is the breakdown by resources for Headquarters and the Regions? How does this compare to FY 88? How many grant applications are expected in FY 88 and FY 89? How much did EPA request for the Technical Assistance Grants program prior to OMB review?

Answer: The following chart shows the amount of FTE, dollars, and applications assumed in the FY 1989 Request to Congress compared to the FY 1988 current estimate. All FTE's are in the Regions.

	FTE	$(Ext.) (in thousands)	Number of Applications
FY 1988	6.5	$ 2,980.0	60
FY 1989	12.3	$ 6,650.0	133

The Agency requested 17.3 FTE and $9.2 million for the Technical Assistance Grant program in the FY 1989 request to OMB.

SUPERFUND ENFORCEMENT RESOURCES

Question: What are the FY 89 enforcement resources in FTEs and dollars for the Superfund program in the Aggregate, broken down by Headquarters and specific regional allocations, and broken down by EPA office? Provide this information for FY 1987 and FY 1988.

Answer: The following attachment provides the requested resource distribution for the Technical and Legal Enforcement Programs. Regional distribution for FY 1989 will not be complete until the later part of the summer. Dollars are shown in millions.

SUPERFUND ENFORCEMENT RESOURCES

FTE	FY 1987			FY 1988			FY 1989		
HQ-Technical			83.7			41.9			95.4
HQ-Legal			41.0			98.7			41.9
NEIC			34.5			45.5			45.5
Criminal Investgs.			9.1			17.3			17.3
	TECH	LEGAL	TOTAL	TECH	LEGAL	TOTAL	TECH	LEGAL	TOTAL
Region 1	36.6	14.9	51.5	44.2	13.9	58.1			
Region 2	65.5	22.7	88.2	82.7	33.9	116.6			
Region 3	59.2	22.1	81.3	75.6	30.6	106.2			
Region 4	51.6	19.0	70.6	76.2	35.2	111.4			
Region 5	81.5	32.1	113.6	96.9	42.7	139.6			
Region 6	34.8	8.3	43.1	39.9	19.0	58.9			
Region 7	27.5	7.6	35.1	34.9	13.3	48.2			
Region 8	26.3	9.0	35.3	30.2	10.8	41.0			
Region 9	36.4	8.6	45.0	43.3	13.1	56.4			
Region 10	26.6	5.9	32.5	27.6	8.1	35.7			
Region Total	446.0	150.2	596.2	551.5	220.6	772.1	606.0	220.6	826.6
TOTAL			764.5			975.5			1026.7

DOLLARS	1987	1988	1989
HQ-Technical	$11.3	$11.3	$11.3
HQ/NEIC	$4.0	$4.5	$4.5
Regions	$49.7	$56.5	$64.7
TOTAL EXTRAMURAL	$65.0	$72.3	$80.5
TOTAL INTRAMURAL	$35.3	$49.0	$51.0
GRAND TOTAL	$100.3	$121.3	$131.5

ASBESTOS IN PUBLIC BUILDINGS

Question: In the February 29, 1988 EPA report on asbestos in public buildings, EPA concludes that a regulatory program is not appropriate for non-school buildings at this time. Yet the report notes that as buildings change hands, investors are insisting that asbestos in buildings be removed as a condition of purchase. Further the report notes that such removals may very well be carried out improperly, creating more hazardous conditions.

If removals are a fact of life already, does not EPA have an obligation to take steps to assure that they are done safely and properly?

Answer: The Agency has taken the following steps to assure that abatement work is performed safely:

o All abatement projects performed in public buildings are subject to the Agency's National Emissions Standard for Hazardous Air Pollutants (NESHAPS) and the Occupational Safety and Health Administration's (OSHA) Construction

Standard. These standards require safe work practices to be utilized that are designed to limit fiber release and human exposure. In addition, the OSHA standard has worker and competent person training requirements;

- The Agency has worked closely with the States to establish certification and training programs so that persons supervising and performing abatement work can learn and implement the safest work practices. To date, 39 States have received grants totalling $2.6 million from EPA to help them establish contractor and abatement worker certification programs;
- EPA has also approved over 150 separate training courses for asbestos inspectors, management planners, contractors and abatement workers where more than 5000 persons have been accredited as inspectors and 4800 as management planners, 12,800 as abatement contractors and 26,000 as abatement workers. These persons are available for use in public building abatement programs at this time and should contribute greatly to the safety of efforts in this area;
- We have issued guidance documents which describe state-of-the-art techniques for performing abatement projects and minimizing the possibility for fiber release.

ASBESTOS IN PUBLIC BUILDINGS

Question: And if removal is not always the best response to asbestos, what will you be doing to help building buyers and sellers choose the best and safest response?

Answer: Since 1979, EPA has had a technical assistance capability in each of its regional offices to provide information to ensure informed decisionmaking about asbestos problems. We are considering initiating the following activities to enhance the Agency's existing technical assistance program:

- Encourage all States to require the use of trained and accredited professionals to help determine the proper response to the presence of asbestos.
- Expand guidance on proper techniques to maintain asbestos which is in good condition and avoid accidental damages through the use of operations and maintenance programs.
- Focus attention on thermal system insulation materials as they are more predominant in public buildings.

ASBESTOS REPORT RECOMMENDATIONS

Question: EPA's February 29, 1988 report does make four recommendations to increase the number of trained inspectors and abatement professionals, to focus attention on the asbestos in the worst condition, to improve enforcement of regulations, and to assess the effectiveness of the AHERA schools rule.

What resources do you need to carry out these recommendations?

Answer: The list below shows the resources that would be needed to carry out the following recommendations:

1) To increase the number of trained inspectors and abatement professionals: $2 million a year for three years for a total of $6 million.

2) To focus attention on the asbestos in the worst condition (to develop and provide proper guidance for dealing with thermal system insulation): $600,000 for three years for a total of $1.8 million.

3) To improve integration of activities to reduce imminent hazards and to improve the enforcement of regulations: $4 million for three years for a total of $12 million.

4) To objectively assess the effectiveness of the AHERA school rules and other current activities on a priority basis. Some of these studies could cost many millions of dollars to conduct on a scientifically sound basis, yet their impact on future abatement projects could be profound. A cooperative effort between industry and the government for these studies should be explored with principal funding by the private sector.

Question: Have you included those resources in the 1989 budget request?

Answer: The 1989 budget includes an appropriate level of resources to begin addressing the problem of asbestos in public buildings. In the Office of Pesticides and Toxic Substances (OPTS), $500,000 has been included to enhance the Agency's existing asbestos technical assistance program. The Agency currently has $2.4 million in its National Emission Standards for Hazardous Air Pollutants (NESHAPS) program for asbestos. Since the NESHAPS standards govern the renovation and demolition of all buildings, potentially a portion of these resources will be used to augment the control of asbestos in public buildings. OAR will also initiate a contractor certification program in 1989.

ASBESTOS REPORT RECOMMENDATIONS

Question: Do you need additional legislation to implement these recommendations or do you already have the authority?

Answer: EPA already has the authority under AHERA to implement the recommendations. We do not believe that additional legislation is needed at this time.

AHERA REGULATIONS

Question: The AHERA regulations have been published and now the burden is on the schools to meet their requirements.

How many states have taken the necessary steps to provide training and certification for contractors?

Answer: To date, five states have met the accreditation requirement for contractors: New Jersey, Alaska, Arkansas, Kansas, and Washington. Six states have met the accreditation requirement for abatement workers: New Jersey, Alaska, Arkansas, Washington, Illinois, and Michgan.

All State programs nationwide that do not fully meet the Model Plan's requirements must be upgraded within the time period specified in AHERA to be at least as stringent as the Model Plan. A number of states that have programs that fall short of the Model Plan's requirements are taking steps to upgrade their programs.

AHERA REGULATIONS

Question: What will be the consequences for schools in states that are slow in getting geared up?

Answer: Schools may encounter three problems if their State is slow in meeting AHERA's requirements. First, schools may have a more difficult time locating accredited personnel in States without an accreditation program. A State-run accreditation program will have a complete list of accredited persons located near the school. If a State does not set up an accreditation program within the time frames established by AHERA, schools must rely on persons accredited through EPA-approved courses. Some schools may find it difficult to locate accredited personnel within close proximity.

Second, a State accreditation program will provide more oversight of State licensed personnel doing work in schools. Under the EPA Model Accreditation Plan, all States must include decertification requirements in their programs. An accredited person could lose his State license if work was not performed adequately. As a result, schools could expect a State licensed person to be more conscientious.

Third, schools will not have their management plans adequately reviewed in States that do not provide sufficient staff to review plans. As a result schools in some States may not get the benefit of the State's expertise during the review process.

INSURANCE FOR ASBESTOS PROJECTS

Question: AHERA called for a study of insurance for asbestos projects. When can we expect to see that?

Answer: The Agency had planned to submit the interim report to Congress in April of 1988, but the report has been delayed until late Spring. The final report is due in October of 1990.

Questions: Can you give us some idea of what EPA has found out about insurance?

Answer: In general, we believe liability insurance for abatement contractors is becoming more available. Since the report is not complete yet, the Agency has not formed final conclusions.

FUNDING FOR RADON ACTIVITIES

Question: The Radon Gas and Indoor Air Quality Research Act of 1986 establishes EPA as the lead agency for our efforts to address the health effects caused by radon pollution. Yet the DOE radon budget request is $14 million, over a million dollars more than the EPA request. What was EPA's request to OMB for radon and how much did you receive?

Answer: In the FY 1989 budget submitted to OMB, the EPA requested 71 workyears and $10.5 million* for programs addressing radon pollution. The President's budget request to Congress contains 70 workyears and $12.8 million* to support EPA's radon programs, an increase of $2.3 million* over the Agency's request to OMB.

Question: What activities would you have funded had you received these additional funds?

Answer: The additional funds allocated by OMB will support the national survey of radon in residences, and provide for pretesting of the survey to assess radon levels in schools. The additional funds will also be used to develop a school diagnostic and evaluation program and to begin work on mitigation techniques for schools.

Question: Why does the Administration continue to favor funding DOE's radon efforts over those of EPA?

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* Total Dollars

Answer: The Administration supports a balanced program of radon research and operational activities which involves both EPA and DOE efforts. A Memorandum of Understanding has been executed between DOE and EPA which outlines the two agencies' roles in radon. The increased level of funding requested in the EPA budget for FY 1989 adds support to surveys which are required by the Superfund Amendments and Reauthorization Act of 1986.

RADON IN DAY CARE CENTERS

Question: Day care centers may pose a particular problem for radon exposure. These centers are often located in basements of houses, churches and other structures where radon levels are highest. What are you doing to address the problem of radon in day care centers?

Answer: At this time, the Agency has not specifically addressed the problem of radon in day care centers, since much of the information we are currently developing through our Radon Action Program will apply to this type of housing. For example, the Agency has developed a variety of measurement and mitigation techniques which can be used in day care centers located in homes, and possibly those located in churches and other structures. In addition, the Agency has distributed public information materials to States and local governments which can assist day care centers in understanding and addressing radon problems.

Question: Shouldn't EPA be increasing its efforts to develop protocols for radon testing in day care centers and to disseminate information about radon to these centers?

Answer: We have developed protocols for measuring radon in homes. We are now developing protocols for measuring radon in schools. With the completion of the school protocols, we will be better able to assist States in addressing radon problems in day care centers as well. In particular, we will be able to determine the types of radon measurements needed to best characterize the potential radon levels in these centers. EPA will work with the States/local governments and other appropriate organizations to assure proper and timely dissemination of information to day care center managers.

RADON DIAGNOSIS AND MITIGATION

Question: Under the asbestos program, EPA has established regional training centers to train asbestos contractors. Would regional training centers improve your ability to disseminate information to state and local governments and contractors on radon diagnosis and mitigation?

Answer: EPA has several successful programs designed to disseminate radon information to State and local governments and contractors. Among these activities are the House Evaluation Program, which provides "hands-on" training to State officials in radon diagnosis and mitigation; the Radon Diagnosis and Mitigation Training Course, which provides classroom training to States and a limited number of private contractors; and technical guidance documents, such as "Radon Reduction in New Construction," developed jointly by EPA and the National Association of Home Builders. Some States are now offering training courses for private contractors, as well as coordinating the dissemination of information to the private sector. Regional training centers could help facilitate and expedite the transfer of technology and information to the States, local governments and the private sector. EPA will consider the use of such centers in the future.

Question: Are you doing any analysis of whether the EPA radon action program is really having an effect in encouraging people with high radon levels to take action to reduce the levels?

Answer: The Agency has some efforts currently underway to evaluate the effectiveness of the Radon Action Program in encouraging people with high radon levels to take corrective action. The first of these efforts is a study to assess the extent of private sector mitigation activities and their effectiveness. This study will be completed in early 1989.

In addition, EPA has some studies underway to evaluate the effectiveness of its public information materials in communicating the risks from indoor radon. These studies will provide an indication of the level of public awareness about the radon problem, and provide insights into individual decisionmaking on this issue.

The results of these efforts will be used by EPA and the States to improve our public information activities.

ANNUAL MITIGATION DEMONSTRATION REPORT TO CONGRESS

Question: Section 118 of SARA requires EPA to report to Congress every year by February 1 on the status of its mitigation demonstration program. Where is this year's report and why is it late?

Answer: This year's report is currently undergoing final Agency review. We expect it to be forwarded to Congress in the near future. EPA is committed to providing a report that is comprehensive and useful to Congress. To this end, EPA has had to collect and analyze a vast amount of data and information from both government and private sources, an effort that has resulted in some delay.

AIR TOXICS

Question: The Administration opposes the air toxics legislation contained in S. 1984. How many air toxics has EPA regulated since the Clean Air Act was first passed in 1970?

Answer: To date, emission standards have been promulgated under section 112 of the Clean Air Act for seven hazardous air pollutants (beryllium, asbestos, vinyl chloride, asbestos, mercury, benzene, radionuclides, and arsenic). "Coke oven emissions" has been listed under section 112, and standards are under development. A list of the pollutants and sources regulated under section 112 is contained in the attached Table A.

The Agency's air toxics program is not limited to efforts under section 112 of the Act. Toxic compounds are emitted into the atmosphere from many sources that emit traditional pollutants. For example, metals and polycyclic organic compounds usually are emitted as particulate matter and many organic toxics also are ozone precursors. As such, many sources of air toxics are regulated under State Implementation Plans, New Source Performance Standards, and Title II for motor vehicles. The extent of indirect air toxics control from these programs has not been quantified rigorously, but it is clear that these programs have reduced public health risks from air toxics substantially.

Question: How many additional National Emission Standards for Hazardous Air Pollutants (NESHAPs) will you promulgate under EPA's budget proposal?

Answer: The Agency's proposed air toxics budget would lead to promulgation of regulations for the 10 pollutants for which intents to list were published in 1985 and for additional source categories of pollutants already listed under section 112. A summary of the current regulatory program for stationary sources of air toxics is contained in the attached Table B.

The regulations that result from this program, however, will not all be promulgated under section 112 of the Clean Air Act. In each case, we will choose the most appropriate statutory authority available for effective and efficient regulation.

Question: What effect will the decision on NRDC v. EPA have on your air toxics program?

Answer: We are still in the process of determining how to realign our policies so that they are consistent with the court's opinion. Responding to the case will take considerable time and energy as the opinion affects the entire NESHAP program. Some standards already promulgated will have to be reevaluated, and we will announce publicly the results of our analysis and any proposed changes to the standards. Standards that have been proposed will go through this same type of reevaluation and a supplemental proposal will be published. Standards under development, especially those at the stages of Agency review and decisionmaking, will require substantial reworking to be made consistent with the new policies. Such a major realignment of the program is going to cause significant delay in the publication of some rules, but we are not certain of the full extent at this time.

Our first priority in responding to the decision are the benzene and radionuclide standards. As you may be aware, the Agency requested a voluntary remand of these standards in the aftermath of the vinyl chloride decision. The court-ordered schedule requires us to reevaluate the benzene rules and propose any actions by June 6, 1988, and promulgate by December 2, 1988. For benzene, these actions will cover the benzene equipment leak NESHAP and the three benzene source categories for which proposed standards were withdrawn in 1984 (maleic anhydride plants, ethylbenzene/ styrene plants, and benzene storage tanks). Although not included in the court order, the proposed benzene coke oven by-product plant NESHAP will be considered on the same schedule. For radionuclides, an extended schedule has been negotiated with NRDC. Assuming that the court accepts the new schedule, the court-ordered schedule for radionuclides will require proposed action by February 28, 1989, and promulgation by August 31, 1989. These actions will cover all five promulgated NESHAP for radionuclides (DOE facilities, NRC-licensed facilities, elemental phosphorous plants, underground uranium mines, and uranium mill tailings), and a new NESHAP for radon from phosphogypsum piles. The new NESHAP policy is being formed in the context of resolving these two cases. Following our decisions on these two pollutants, we will then proceed to reevaluate other NESHAP in priority order as our resources allow. I expect that the next highest priority will be the new NESHAP currently under development, including the NESHAP for coke oven emissions that already has been proposed.

Question: How are you going to speed up the pace of this program when you are asking for $3 million less than you had in FY 87?

Answer: Because of the sequence of actions necessary to respond to NRDC v. EPA, it does not appear that the program can be speeded up, at least not in the short run. By FY 1989, most of the technical work for ongoing standards (Table B) will be completed; and that accounts for the decrease in funding requested. Until the Agency understands the full impact of the court's decision, it will be difficult to increase the pace of the regulatory program.

March 14, 1988

TABLE A

Existing Promulgated NESHAPs (40 CFR 61)

Pollutant	Source Categories	Date of Promulgation (F), Revision (R) or Review (Rev.)
Beryllium (4)	40 CFR 61.30 (Subpart C) o Extraction Plants o Ceramic Plants o Foundries, incinerators, and propellant plants which process beryllium ore, beryllium oxide, beryllium alloys or beryllium waste	1974 (R)
	40 CFR 61.40 (Subpart D) o Rocket motor test sites	1978 (R)
Mercury (3)	40 CFR 61.50 (Subpart E) o Processors of mercury ore to recover mercury o Production of chlorene gas with chlor-alkai cells o Incineration or dry wastewater treatment plant sludge	1984 (REV) 1986 (R)
Vinyl (3) chloride	40 CFR 61.60 (Subpart F) o Ethylene dichloride plants o Vinyl chloride plants o Polyvinyl chloride manufacture	1986 (R)
Asbestos (17)	40 CFR 61.142-61.153 (Subpart M) o Asbestos mills o Roadways o Manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials	1988 (R)

Pollutant	Source Categories	Date of Promulgation (F), Revision (R) or Review (Rev.)
Asbestos (Cont.)	o Manufacturer of cement products	
	o Manufacture of fireproofing and insulating materials	
	o Manufacture of friction products	
	o Manufacture of paper, millboard and felt	
	o Manufacture of floor tile	
	o Manufacture of paints, coatings, caulks, adhesives, and sealants	
	o Manufacture of plastics and rubber materials	
	o Manufacture of chlorine	
	o Manufacture of shotgun shell wads	
	o Manufacture of asphalt concrete	
	o Building demolition and renovation	
	o Spraying operations	
	o Fabricating operations	
	• Insulating materials	
Benzene	(1) 40 CFR 61.110 (Subpart J)	1984 (F)
	o Equipment leaks	

Pollutant	Source Categories	Date of Promulgation (F), Revision (R) or Review (Rev.)
Radionuclides	40 CFR 61.100 (Subpart I)	
	° NRC-licensed facilities and facilities owned or operated by any Federal agency other than Department of Energy	1985 (F)
	40 CFR 61.120 (Subpart K)	
	° Elemental phosphorus plants (Subpart K)	1985 (F)
	40 CFR 61.20 (Subpart B)	1985 (F)
	° Underground uranium mines (Radon-222)	
	40 CFR 61.90 (Subpart H)	1985 (F)
	° DOE facilities	
	40 CFR 61.250 (Subpart W)	1986 (F)
	° Licensed uranium mill tailings (Radon-222)	
Inorganic Arsenic (3)	40 CFR 61.160 (Subpart N) ° Glass manufacturing	1986 (F)
	40 CFR 61.170 (Subpart O) ° Primary copper smelters	1986 (F)
	40 CFR 61.180 (Subpart P)	1986 (F)
	° Arsenic trioxide and metallic arsenic production	
Coke Oven Emissions	[Listed under section 112 but no standards promulgated at this time]	

Total pollutant/source categories regulated: 36

March 14, 1988

TABLE B

AIR TOXICS REGULATIONS CURRENTLY BEING CONSIDERED UNDER SECTION 112 OF THE CLEAN AIR ACT OR OTHER AUTHORITIES

Pollutant/Source Category

Chromium - Comfort Cooling Towers[1]

Chromium - Industrial Cooling Towers

Chromium - Electroplating

Hazardous Organic NESHAP (covers all eight organic compounds for which notices of intent to list have been published and 13 source categories listed below)

- Butadiene Production
- Miscellaneous Butadiene Sources
- CFC Production
- Ethylene Oxide Production
- Ethylene Dichloride Production
- Chlorinated Hydrocarbon Production
- Styrene Butadiene Rubber Production
- Polybutadiene Production
- Neoprene Production
- Chlorine Production
- Chlorinated HC Use in Chemical Production
- Pesticides Production
- Pharmaceutical Production

Ethylene Oxide - Commercial Sterilizers

Perchloroethylene - Dry Cleaning

Trichloroethylene - Degreasing (Also covers perchloroethylene, methylene chloride)

Coke Oven Emissions - Charging and Topside Leaks

Benzene - Coke Oven By-Product Plants

Benzene - Reconsideration of equipment leak NESHAP and withdrawal of proposals for maleic anhydridge, ethylbenzene/styrene, and storage tanks.

Asbestos Revision - Demolition and Renovation

Woodstove NSPS

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[1] Standards being developed under TSCA, Section 6.

HAZARDOUS WASTE REDUCTION

Question: A number of reports, including ones from the Office of Technology Assessment and your own Science Advisory Board, have concluded that EPA should significantly expand its program to assist industry to reduce the generation of hazardous waste. According to OTA, EPA requested only $398 thousand for waste reduction in FY88. In recognition of these recommendations, the Congress last year added $4.5 million to EPA's waste reduction effort. How are you spending the additional funds Congress provided for this program in FY88?

Answer: The majority of the money (approximately $3 million) is being put toward direct State program incentive grants. With $1 million, EPA will: 1) establish a national technical clearinghouse network (EPA has begun work with several States in developing a pilot computer retrieval system), and 2) collect and analyze technical data that will help focus our clearinghouse on particular industries, States, and Regions. The remaining $500 thousand will pay for the six workyears to support these activities.

Question: What is your budget request for this program in FY89?

Answer: Hazardous waste minimization resources for FY89 include 7.2 workyears and $1.9 million. These resources are specifically for hazardous waste minimization, research, and implementation programs; other Agency resources will indirectly support waste reduction practices.

Question: Why are you proposing to cut the program?

Answer: Prior to Congress' add-on of $4.5 million for 1988, EPA's 1989 waste minimization request was greater than its 1988 request ($1.9 million in 1989 versus an original request of $950 thousand for 1988. The 7.2 workyear level is the same for both years.) Furthermore, in the past several months EPA has targeted resources to further enhance the Agency's efforts in this area. For example, in 1987 EPA targeted its $3 million RCRA integrated training initiative to waste minimization projects.

Question: Does it make sense to put so relatively little funding into a program which has such a potentially enormous payback?

Answer: The Agency agrees that effectively minimizing the amounts and/or the hazardousness of wastes generated can greatly reduce both the total cost of managing wastes and the potential harmful environmental effects of waste disposal. The Agency believes that its current and proposed programs will promote good waste minimization practices. EPA's waste reduction program focuses on outreach and communication activities to make generators aware of the economic advantages to be realized by effectively minimizing waste, and by promoting private development of waste reduction technologies. Several offices in EPA have identified staff to begin working on a multi-media approach to identify regulatory and outreach initiatives.

SCIENCE ADVISORY REPORT ON HAZARDOUS WASTE REDUCTION

Question: The EPA Science Advisory Board issued a report on October 9, 1987 recommending that EPA give hazardous waste reduction "substantial visibility and commitment at the highest levels of the Agency." How is EPA responding to the recommendations in this report?

Answer: The Agency is implementing the report's recommendations. The Administrator will issue a directive to all top-level managers requiring the development of an Agency-wide, multimedia waste minimization program. Executive Council on Waste Minimization that will ensure coordination and monitor consistency among Agency programs and review multi-media issues. In addition, the Agency has solicited discussion and input on its plans to develop an Agency-wide program in a large number of conferences and meetings with high-level industry, State and environmental organizations. EPA has met with major industry trade associations and international government and technical institutions to enhance our program's visibility. The Agency has also published a public information booklet on waste minimization that has received widespread acclaim.

Question: How is your budget proposal consistent with the recommendations in the report?

Answer: The Agency's budget proposal moves forward on each of the report's recommendations. For example, EPA:

- has prepared a directive from the Administrator that will focus the attention of all top managers on the multi-media initiative. The directive lays out a clear need for a multimedia strategy.
- has begun an intensive outreach effort. Our waste minimization staff has met with 35 States and representatives from at least 30 major waste generators in the past several months.
- will soon publish its multi-media policy and EPA strategy in the Federal Register.
- is gathering information on existing technology for inclusion in a national technical clearinghouse.

Question: What is your position on S.1429?

Answer: The Agency has reviewed S.1429 and feels the purposes of the bill are parallel, and in some respects identical, to the Agency's current program strategy. We are currently analyzing the specific provisions of the bill.

OCEAN DUMPING REGULATION

Question: Your budget document (p. WQ-4) says that EPA expects ocean dumping applications to increase because of the land-ban regulations under RCRA and your revised ocean dumping regulations. Are you suggesting that hazardous wastes which are not safe to be dumped on land should now be dumped in the ocean?

Answer: No, we are saying that we must anticipate the potential outcomes that may result from these regulations. Specifically, we think it is likely that if a generator finds that a currently used disposal option is no longer feasible or could be eliminated by law, the generator is likely to seek alternative disposal options. In the case of hazardous waste, we expect generators to evaluate the feasibility of ocean disposal. The Agency is considering the implications and significance of this and is taking steps to better quantify and analyze the potential impacts on the ocean dumping program.

Question: Hasn't EPA had a policy of phasing out ocean dumping of industrial waste?

Answer: EPA's policy has been to minimize the levels of waste generated so that the need for waste disposal is reduced. Since enactment of the Ocean Dumping Act in 1972, there has been a substantial decline in both the number of dumpers and the amount of industrial waste material being dumped. In 1973, there were approximately 6 million wet tons of industrial waste ocean dumped; this amount declined to approximately 0.3 million wet tons per year in 1986.

Question: What will your policy be for addressing this increase in applications?

Answer: When evaluating any permit applications for ocean dumping, EPA will ensure that an applicant has evaluated all practicable land-based alternatives and that ocean dumping is the only feasible alternative.

Question: Why are you adopting regulations which will lead to an increase in applications for ocean dumping permits?

Answer: EPA is in the process of developing proposed revisions to the existing ocean dumping regulations which will address a number of issues. The revisions may or may not lead to an increase in applications for ocean dumping. We are speculating that the increased restrictions on land-based disposal options may prompt generators to evaluate the feasibility of ocean disposal. The existing regulations were issued in 1977 and have been the focus of several legal challenges.

The first case to which the revised regulation must respond is the City of New York v. EPA. The court found that, under the Marine Protection, Research, and Sanctuaries Act, EPA generally cannot prohibit ocean dumping solely because materials fail the marine impact criteria, and that EPA must take into consideration the need for such dumping and the availability and impacts of land-based alternatives. A second case, National Wildlife Federation v. Costle, involving dredged material, found that while the MPRSA does not require that the regulations for dredged and nondredged material be the same, a statement of the basis and purpose for the differing treatment of dredged material must accompany proposed regulations. In addition, since issuance of the existing regulations, several changes have been made to the statute. All of these issues will be addressed in the revisions.

NEW YORK BIGHT APEX

Question: The New York Bight Apex is recognized as one of the most polluted areas in the world. Because of the importance of the New York Bight for coastal and marine recreation, the important marine resources found in this area and the extent and variety of sources of pollution affecting the Bight, the Congress enacted legislation to require EPA to establish a New York Bight Restoration Plan. Congress appropriated $500,000 to initiate this effort in FY 1988 and authorized the program at $3 million a year for three years. Why are you proposing to reduce the budget to develop the Restoration Plan at a time when you should be increasing this effort?

Answer: In FY 1988, Congress earmarked in report language $500,000 to initiate the New York Bight effort. Given the timing of the funding availability (January 1988), this effort is just now getting underway. Consequently, we will not use all of the $500,000 in 1988 and, therefore, some of the $500,000 will be available for 1989 activities. In the FY 1989 budget, EPA requested an additional $300,000 for the Bight, for a total of $800,000 over the 18 month period. We believe that this level of funding will be adequate to move forward with development of the Restoration Plan.

Question: How are you going to meet the deadlines established in this legislation with a reduced budget?

Answer: As required by the legislation, EPA will submit to the Congress by June 29, 1988 a detailed schedule (including associated funding requirements) for completing preliminary reports and the Restoration Plan. This schedule will outline EPA's strategy for completing the Plan.

Question: The bill requires EPA to submit a report to the Congress by the end of June detailing a schedule for completing the preliminary reports and restoration plan and to hold a public hearing by the end of August 1988 on the plan. Will EPA meet these requirements?

Answer: EPA expects to meet the requirements of the legislation by the specified deadline.

DREDGED MATERIAL DUMP SITE

Question: The Water Resources Development Act requires EPA to designate a new dredged material dump site 20 miles or more from the coast by December 1989. Will EPA be able to designate the new dump site by the statutory deadline?

Answer: No, we can not meet the legislated deadlines.

Question: If not, when will the designation be completed?

Answer: The following schedule has been developed to accomplish the site designation work:

° 13 months	Information Gathering/Site Studies (start preliminary Environmental Impact Statement (EIS)
° 10 months	Complete Preliminary and Draft EIS Proposed Rule for Site Designation
° 13 months	Complete Final EIS/Final Rule
36 months	

With work on the designation beginning in March 1988, EPA anticipates completing the site surveys, a preliminary EIS, a draft EIS, and a proposed rule to designate the Mud Dump Site by February 1990.

The Final EIS and site designation could occur within another thirteen months, or by late spring of 1991. However, since the New York Bight area is of high environmental concern and public visibility, the completion date of final designation of the site depends on a number of factors including the Corps of Engineers involvement, the information collected from the site surveys, and the comments received from various sources. Given these unknowns, additional delays are possible.

Question: How much will you spend in FY 1989 on this designation?

Answer: EPA has budgeted $400,000 in FY 1989 for the designation work by Region II. EPA has also programmed $400,000 for this work in FY 1988.

DREDGED MATERIAL DUMP SITE

Question: Wouldn't additional resources help you comply with this statutory requirement?

Answer: Based on EPA's site designation experience, additional resources would not enable EPA to compress the technical and scientific studies and analysis necessary to identify, evaluate, and designate an environmentally suitable alternative dump site.

PLASTICS IN MARINE AND COASTAL ENVIRONMENTS

Question: The Marine Plastic Pollution Research and Control Act of 1987 requires EPA to conduct a study to find ways to eliminate plastics in the marine and coastal environments and requires EPA and NOAA to conduct a public education program. How much did or will you spend on these efforts in FY 1988?

Answer: EPA has obligated $40,000 toward the study of marine plastic pollution in the New York area. In FY 1988, an additional $350,000 is being allocated to conduct the marine-related portions of the EPA studies required under the Plastic Pollution Research and Control Act (PPRCA) of 1987 -- the New York Bight plastic study and those portions of the EPA plastic study related to the marine environment. In addition, other EPA offices, such as the Office of Solid Waste and Emergency Response (OSWER) and the Office of Policy and Program Evaluation (OPPE), will be conducting portions of the larger EPA plastic pollution study required under PPRCA.

Question: What is your proposed budget for FY 1989?

Answer: The proposed budget for FY 1989 is $100,000.

Question: Why are you cutting this program?

Answer: Since the New York Bight plastic study is due in FY 1988 and the larger EPA plastic pollution study is due in June 1989, most of our activities will be funded and completed in FY 1988.

Question: The Act requires EPA to conduct a study of plastics in the New York Bight by the end of June 1988. Will you complete this report by the deadline?

Answer: EPA's Region II in New York is conducting this study and plans to meet the June 1988 deadline.

SLUDGE MANAGEMENT REGULATIONS

Question: Under the Clean Water Act Amendments of 1987, EPA was required to promulgate sludge management regulations by August 31, 1987. Why has EPA failed to meet this deadline?

Answer: In developing technical sludge regulations, the process has been slowed due to the complexity of analysis required, the enormous amount of data to be considered, and the multi-media nature of this rule which cuts across several Agency programs that have regulated some aspect of sludge use/disposal in the past.

Another factor that has slowed the process is a court ruling on the vinyl chloride regulation. On July 28, 1987, the United States Court of Appeals for the District of Columbia Circuit ruled that in establishing emission standards for hazardous air pollutants under Section 112 of the Clean Air Act, EPA must make an initial determination of what is safe without regard to costs. Costs can only be considered in assessing the extent to which the rule requires a margin of safety beyond what is required to protect public health. In addition to this case, a similar ruling was made with respect to Nuclear Regulatory Commission regulations involving protection of public health by assessment of risks. The EPA is currently examining the implications of these court cases for the sludge regulatory program.

Question: When do you expect to promulgate these regulations?

Answer: EPA anticipates the rule will be proposed for public comment by October 1988 and promulgated by December 1989.

NONPOINT POLLUTION

Question: Coastal States are concluding that nonpoint source pollution is a particular problem in coastal areas. How much will EPA spend on nonpoint source pollution in FY 1989, broken down by the amount from construction grants set-asides and amounts, if any, requested from additional sources? Please provide such information for FY 1987 and FY 1988. How much did EPA request for nonpoint prior to OMB review of EPA's FY 1989 request?

Answer: The following chart summarizes the amounts EPA has spent and expects to spend on grants to assist States to control nonpoint source pollution during FY 1987, 1988 and 1989 (in millions of dollars):

	FY 1987	FY 1988	FY 1989
§205(j)(1)	1.6	1.6	1.6
§205(j)(5)	12.5	23.0	13.3
§319(h&i)	N/A	0.0	0.0
§106	4.2	4.2	4.2
Total	$ 18.3	$ 28.8	$ 19.1

In addition to these sources, States may fund implementation of approved State NPS Management Programs under the Section 201(g)(1) 20% discretionary set-aside of their construction grant allotment and through their State Revolving Funds. Because both these sources can be used only for approved NPS Management Programs, they will in most cases not come into play until mid-FY 1989. At this time, EPA expects some States to employ these two sources, but the exact scope of such use is not clear.

Given the availability of other funding sources (noted above), no funds for Section 319 grants were requested in the FY 1989 OMB submission.

NONPOINT POLLUTION

Question: What do you expect to accomplish over the next two years on nonpoint source pollution?

Answer: During FY 1988 EPA will continue to provide technical and management guidance and support to the States in developing and submitting approvable NPS Assessment Reports and Management Programs. Beginning in late FY 1988, EPA will review and approve State NPS Assessments and Management Programs. This review and approval process will continue through most of the first two quarters of FY 1989. EPA will then review and approve State workplans for implementation of approved NPS Management Programs [205(j)(5)/205(g)(1)] and provide technical support and technology transfer to the States.

Question: Why isn't EPA funding the nonpoint source grant program authorized under the 1987 Clean Water Act Amendments?

Answer: The Agency believes that there are sufficient sources of funding currently available to address resource needs of the States in developing nonpoint source assessment reports and management programs. Section 205(j)(5) funds are available for planning and development activities related to assessment reports and management programs. The States may also use this source to fund implementation activities once assessments and management programs are approved by EPA. Sections 106 and 205(j)(1) may be used for general program planning activities including development of nonpoint source assessment activities. Sections 604(b) (State Revolving Fund beginning in 1990) and 201(g)(1) (20% Construction grant allotment) may also be used to fund nonpoint source activities.

NATIONAL ESTUARY PROGRAM

Question: What is the status of designating New York Harbor and the Delaware Bay under the National Estuary Program?

Answer: EPA has developed a phased approach to implementing the National Estuary Program. Management conferences have already been convened for six programs: Albemarle-Pamlico Sounds, Buzzards Bay, Narragansett Bay, Long Island Sound, Puget Sound, and San Francisco Bay. Nominations for new estuaries will be evaluated for inclusion in the program when a signed governor's nomination consistent with national guidance is received. Under the Act, a governor's nomination must demonstrate national significance, the need for a management conference, the likelihood of success of a conference, and the need for additional pollution abatement controls. Management conferences may be convened as early as April or May 1988.

EPA is giving priority consideration to convening management conferences to the other six estuaries named in the Act, including the New York-New Jersey Harbor and Delaware Bay. From February through June 1988, EPA is providing technical assistance through conference calls, on-site visits, and workshops in response to requests from the States and EPA Regional staff. These activities are designed to assist the States in understanding the program goals, objectives, and requirements, and in preparing nominations.

For New York-New Jersey Harbor, we have already reviewed a nomination and provided comments to ensure that the nomination is consistent with national guidance. We are working with the States of New York and New Jersey and EPA's Region II in New York, and we will participate in a public workshop scheduled for May 4-5, 1988. We anticipate a decision this Spring on the convening of a management conference.

For Delaware Bay, we have conducted a workshop with the States of Delaware, New Jersey, and Pennsylvania, and EPA Regions II and III to assist them in their preparation of a nomination. We anticipate a decision in early summer on the convening of a management conference for Delaware Bay.

WASTE INCINERATION

Question: Local governments are increasingly relying on incinerators to dispose of sewage sludge and garbage. What is the status of your efforts to regulate air emissions and ash from municipal incinerators?

Answer: In June 1987, the Agency published a report to Congress, entitled "Municipal Waste Combustion Study: Report to Congress (EPA/530-SW-87-02/a-1). Based upon the results of this report, EPA issued a notice in the Federal Register (52 FR 25399) that announces its intent to regulate emissions from new and modified municipal waste combustors (MWC) under section 111(b) of the Clean Air Act, new source performance standards (NSPS). Pollutants to be regulated will include one or more designated pollutants (pollutants not regulated under sections 108-110 or 112) thus invoking section 111(d). Section 111(d) requires States to develop additional emission standards for existing MWC based on EPA emission guidelines. The proposal of the NSPS and the 111(d) guideline document will be published simultaneously as will the subsequent promulgations. The project currently is in the technical information gathering phase. In addition, the Agency has issued "Operational Guidance on Control Technology for New and Modified Combustors (June 26, 1987) to assist States in making permitting decisions.

For sewage sludge management, the Agency is in the process of developing regulations under section 405 of the Clean Water Act for five disposal methods. Part of this rule will address air emissions from sewage sludge incineration. The regulations will be implemented through State permits, and the Agency has proposed and taken comment on regulations for approvable State plans for sludge management.

The Agency is also actively assessing the characteristics of municipal waste combustion ash, its potential environmental and human health impacts, and a number of ash disposal and reuse options; data collection and site analyses are being conducted by both the Office of Solid Waste, the Office of Research and development, and several industry groups. This activity is being conducted through over 20 separate research or data collection projects.

Question: What do you hope to accomplish over the next two years?

Answer: Over the next two years, the Agency plans to propose an NSPS for MWC under section 111(b) of the Clean Air Act and propose emission control guidelines for existing MWC under section 111(d) of the Act. Public comments will be collected and a final rulemaking package will be assembled for Agency review and publication in 1991.

For sewage sludge management, rules will be proposed for distribution and marketing, land application, landfills, incineration, and ocean disposal under section 405 of the Ocean Water Act. Technical support documents will be published for each of these five categories. Public comments will be collected and a final rulemaking package will be assembled for review and publication. In FY 89, technical information development will commence for a second phase of rules on sewage sludge management to consider additional pollutants and processes.

The Agency is also considering issuing ash management standards under RCRA that are tailored to the unique characteristics of the material. We have already made substantial progress on a set of technical guidelines for ash disposal facility management. We will integrate the results of our research and environmental assessments with any new legislation in developing ash management standards.

Question: What are you spending on this program in FY 88 and what do you propose to spend for FY 89?

Answer: The following reflects the Agency's current and requested spending plans:

	($000)			
	FY 88		FY 89	
	EXT$	FTE	EXT$	FTE
Municipal Waste Combustion (MWC)	1,106	12.6	740	10.0
Sewage Sludge Management	980	10.8	1,600	10.8
MWC Ash Rules	350	1.8	630	2.6
TOTAL	2,436	25.2	2,970	23.4

NON-HAZARDOUS SOLID WASTE

Question: What are you doing to assist the states in managing their non-hazardous solid waste?

Answer: The Agency recognizes that the ultimate responsibility for managing municipal solid waste lies with State and local governments. The Federal Government's role is essentially two-fold: 1) provide basic regulatory criteria, including guidance on implementing those criteria, which States will use as a starting point for their own regulatory programs; and 2) serve as a clearinghouse for information on solid waste management, collecting and disseminating among the States data on good waste management practices. Both efforts should help to establish a sound, comprehensive national direction.

Many States prepare solid waste management plans as a means of identifying strategies for municipal waste management. Revising those plans currently in place and implementation of plans for States without plans will be critical in the period following promulgation of the new criteria for solid waste disposal facilities. These plans should address efforts in recycling and source control, public education and involvement, waste generation projects, facility siting and financing considerations. The Agency will work close with States to ensure quality solid waste management plans.

The Agency has recently established the Municipal Solid Waste Task Force, whose primary goals include defining the appropriate roles of the various levels of government concerning municipal sold waste management and developing a national strategy for municipal solid waste management. Issues that the Task Force will investigate include: how the Federal government can best lead States and localities towards creative, effective solutions to municipal waste disposal problems; and how States can work together, through the regional planning process, to develop regional solutions to disposal problems.

In response to mandates of the Hazardous and Solid Waste Amendments, the Agency has studied the adequacy of current solid waste disposal criteria (40 CFR Part 257), and will soon report to Congress with its recommendations for changes. Also under development are revisions to the criteria for those solid waste disposal facilities that may accept small quantity generator wastes or household hazardous wastes (which include municipal solid waste landfills). EPA is also in the process of developing air emissions standards for municipal solid waste combustors and guidance on disposal of municipal solid waste combustion ash.

Finally, the Agency has underway a number of efforts, described below, on municipal solid waste recycling and source reduction. These activities will set standards that the States can use as guideposts for their own municipal waste programs.

Question: What is EPA doing to encourage source reduction and recycling of non-hazardous solid waste?

Answer: EPA believes that source reduction and recycling will play an important role in addressing the nation's growing municipal waste problem. Implementing practical and efficient source reduction and recycling programs will provide much-needed relief at the disposal end of the waste management process, which is being taxed severely by increasing solid waste generation. The Agency is promoting a national goal of achieving a 25% source reduction and recycling rate in four years.

One direct contribution the Agency is making toward a national goal of increased recycling is the development of Federal procurement guidelines. EPA has set standards requiring Federal offices to purchase paper products containing high percentages of recycled materials. Other procurement guidelines under development would require purchasing re-refined oil and retread tires for government vehicles.

The Agency is taking several other major steps to encourage source reduction and recycling activities. In response to a recent Congressional mandate, the Agency will develop a report to Congress on the effects of plastics on the environment. The recently-established Municipal Solid Waste Task Force is looking closely at current source reduction and recycling activities to identify and address impediments to effective implementation of such programs. The Agency is initiating the collection of information on State and local recycling programs, and will co-sponsor a conference in late-March, 1988, involving representatives of industry, government, and environmental groups to pool knowledge and generate discussion on municipal solid waste recycling and source reduction. In addition, the Agency has conducted several conferences on household hazardous waste, and will continue to work on issues relating to the recycling of used crankcase oil. The Agency will continue to advocate recycling as a major feature of State solid waste plans.

Question: What is EPA proposing to spend on these efforts in FY 89?

Answer: The 1989 Agency request for municipal solid waste programs, including regulation and guidance development, technical assistance to States, and technical assistance to State and local governments for recycling and source reduction programs includes 40 workyears and $7.5 million in Headquarters and the Regions. The Agency is also requesting 10 workyears and $3.7 million for evaluation and criteria revisions for industrial solid waste units. This represents the Agency's commitment to a stronger national municipal solid waste managment program.

CLEAN LAKES PROGRAM

Question: Why didn't you propose to fund the Clean Lakes program? Did EPA request any funding prior to OMB review of EPA's FY 89 budget request? If so, how much did EPA request from OMB?

Answer: It is the Agency's position that lake eutrophication is an intrastate water quality problem and lake restoration and protection is most appropriately handled by the States in conjunction with other water quality priorities. The Agency requested no funds for Clean Lakes in the FY 1989 OMB submission.

OFFICE OF COMPLIANCE MONITORING FUNDING

Question: What in dollars and FTEs is the FY 89 request for the Office of Compliance Monitoring, broken down by activity, including but not limited to the PCB program? Provide information on funding levels for OCM in all previous years by activity.

Answer: Funding for both the headquarters Office of Compliance Monitoring and for the corresponding regional program is organized by general functional activity (e.g., case development, compliance inspections) rather than by specific chemicals. Attached is a summary of actual resource utilization for the national TSCA, FIFRA and Title III enforcement programs, as expressed in Congressional requests beginning in 1985, the year in which the Office of Compliance Monitoring was established.

ATTACHMENT

EPA HEADQUARTERS AND REGIONAL FIFRA, TSCA AND TITLE III ENFORCEMENT PROGRAMS

ACTUAL EXPENDITURES 1985-1987, CURRENT ESTIMATE 1988, REQUEST 1989
(Dollars in thousands)

	1985 Actual			1986 Actual			1987 Actual		
	FTE	Intra-mural $	Extra-mural $	FTE	Intra-mural $	Extra-mural $	FTE	Intra-mural $	Extra-mural $
FIFRA Enforcement	107.5	4188.8	9805.8	107.9	4416.0	9515.3	105.1	4500.2	8879.2
TSCA Enforcement	158.4	5748.3	2753.9	169.9	6278.2	4289.5	166.1	6759.8	4074.2
Title III Enforcement									
Total	265.9	9937.1	12559.7	277.8	10694.2	13804.8	271.2	11260.0	12953.4

	1988 Current Estimate			1989 Request		
	FTE	Intra-mural $	Extra-mural $	FTE	Intra-mural $	Extra-mural $
FIFRA Enforcement	104.6	4852.0	8808.4	104.6	5013.3	8808.4
TSCA Enforcement	184.3	7690.3	4215.5	184.3	7988.6	4215.5
Title III Enforcement	11.0	524.0		11.0	542.3	1500.0
Total	299.9	13066.3	13023.9	299.9	13544.2	14523.9

NATURAL GAS PIPELINE TASK FORCE

Question: Responding to the Texas Eastern Gas Pipeline case, EPA established a Natural Gas Pipeline Task Force. What offices are represented on the Task Force? How many staff work on the task force and who are such personnel? For FY 89 what in FTEs and dollars are the resources for this Task Force? What were such resources for prior years?

Answer: When the Texas Eastern matter first arose in the spring of 1987, the need for a temporary, high-level coordination effort among the various EPA headquarters and regional offices became apparent. Accordingly, the Deputy Administrator assembled representatives from the Office of Enforcement and Compliance Monitoring, the Office of Solid Waste and Emergency Response and the Office of Pesticides and Toxic Substances, among others, to form an ad-hoc task force. This group met on an as-needed basis to plan an overall course of action for the Agency, with a focus on how to improve communications among the offices involved. Because the task force was temporary, there were no specific resources earmarked for its activities in our 1988 budget, and no resources are requested for FY 1989.

EDISON TEST AND EVALUATION FACILITY

Question: What is the status of the renovation and construction activities funded at the Edison, New Jersey facility by the FY 1988 Continuing Resolution?

Answer: Currently the building and property to be renovated are in use for storage and testing that does not require an RD&D permit. Negotiations are underway to have the property and building transferred from the General Services Administration to EPA.

Question: When will work begin on the facilities to be used jointly by EPA and the consortium of New Jersey Universities?

Answer: The Program of Requirements, which describes functional program and architectural/engineering requirements, was completed on March 18, 1988. EPA will then begin negotiation with the architectural and engineering (A&E) firm for final design. We estimate it will take from 1-3 months to negotiate a signed A&E contract. The planned design period is one year, and the planned construction period is one-and-a-half years. Testing with hazardous and toxic substances in the renovated area could begin in 1989 when all needed permits are received. Full occupancy of the facility is projected for late 1990.

Compliance with numerous Federal, State (New Jersey), and municipal regulations will be required. We are applying for all necessary Federal, State and local permits.

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

Question: What specifically accounted for the cuts in the FY 89 request for the Office of Pesticides and Toxic Substances?

Answer: The primary change between the FY 1988 budget for OPTS and the FY 1989 request is that no funding was requested for the Asbestos Loan and Grant program.

Question: Did EPA request any funds for the Asbestos in Schools Loans and Grants program prior to OMB review of the EPA FY 89 request? If so, how much was requested?

Answer: EPA did not include funds for the Asbestos in Schools Loans and Grants program in the FY 1989 OMB request. Previous federal funding has already greatly reduced the problem. These activities should now be the primary responsibility of State and local governments.

SEWAGE CONSTRUCTION

Question: EPA proposed cutting by $900 million below authorized levels the funding for sewage construction. Did EPA assess what impact this will have on State efforts to comply with the Clean Water Act, as amended? If so, what impact is expected?

Answer: The Administration's funding proposal of $12 billion for FY 1986 - 1993 is sufficient to provide the Federal share (estimated at $11.6 billion) of wastewater treatment construction needed to comply with the National Municipal Policy component of the Clean Water Act.

Unmet wastewater treatment needs were identified in the 1986 Needs Survey to total $76 billion. However, less that half that amount ($36.2 billion) is needed for construction that is eligible for grant funding (i.e., secondary treatment, advanced treatment, interceptor sewers, and correction of infiltration/inflow problems). In the absense of leveraged State Revolving Fund programs, we estimate that about $20 billion of these facility needs would receive Federal assistance under the Administration's $12 billion program.

Depending on the amount of State leveraging, the amount of wastewater treatment needs that receive Federal assistance could reach $25 billion. Therefore, with Federal assistance provided for up to $25 billion of facility construction needs, the Administration's program will go a long way toward addressing all the grant eligible facility needs ($36.2 billion).

Question: What specifically does the President mean when he calls in his Budget Message for privatizing sewage treatment? What percentage of the $76 billion in unmet national sewage construction does the President's plan anticipate could be met through privatization?

Answer: Even though many of the tax advantages that previously made privatizing municipal wastewater treatment facilities attractive were repealed by the 1986 Tax Reform Act, we are still trying to encourage privatization wherever possible. EPA is creating a staff to implement the new E.O. 16215 on the "Performance of Commercial Activities and Other Privatization Initiatives." EPA will be encouraging privatization of its environmental programs, including wastewater treatment facilities and other opportunities that may be proposed by the President.

The net results of these efforts are difficult to predict in terms of projecting what percentage of unmet sewage treatment can be met through privatization. In general, we believe that privatization of municipal wastewater treatment facilities will be evaluated and applied on a case-by-case basis where the function can be better performed by the private sector. It appears to us that privatization of operation and maintenance, particularly at smaller treatment plants, offers the greatest promise in the municipal wastewater treatment field.

QUESTIONS SUBMITTED BY SENATOR MIKULSKI

EPA'S NEW HEADQUARTERS

Question: I know EPA needs and deserves a new HQ -- your current HQ lease expires soon and I'm told the building isn't "quality" space. The FY88 CR gave GSA the authority to propose either an outright federal purchase or a lease-purchase for this facility, so long as it was a Metropolitan DC search. I know EPA favors a District location, and perhaps there's good case to be made for that, but should we also not be concerned about cost; OMB's telling us we can't afford the construction grants program. If we can't afford that, can we afford to put EPA in downtown DC housing that might run $40 square foot, while a MD site would be $25? That difference might save the Agency $15M+ a year in building costs.

Answer: The prospectus currently before the House Committee on Public Works calls for a Government-owned facility. GSA indicates that the difference between D.C. and suburban Maryland construction costs is negligible.

As a regulatory agency, EPA constantly meets with the Congress, other Federal agencies and our counterparts in the international community. We are closely involved with environmental and conservation groups, most of whom are headquartered in D.C., as well as with representatives from the regulated industries. The Agency's ability to confer and consult with the Congress as well as other Executive Branch Agencies and other interested parties would be adversely affected.

EPA's relationships with our international counterparts is of growing importance as emerging environmental issues, such as chlorofluorocarbons, are increasingly international in scope. The American public which deals with us through our public dockets, public information centers, specialized libraries and direct meetings with EPA staff, benefits from our D.C. location. Access to the EPA would be limited by a suburban location.

QUESTIONS SUBMITTED BY SENATOR GARN

STRATOSPHERIC OZONE DEPLETION RESEARCH

Question: In 1986 our Subcommittee noted that a scientific consensus was developing that human society and the Earth's environment may be severely effected by global warming and stratospheric ozone depletion caused by man-made pollutants. We were concerned whether the EPA was sufficiently funding this issue and if failure to provide resources was not only affecting your analysis of potential control of CFC's, but also weaken the U.S. hand in the then upcoming international negotiations involving CFC's. Your statement mentions significantly increasing research support on stratospheric ozone depletion. Please outline these activities, especially regarding work being undertaken cooperatively with other Federal agencies.

Answer: In FY 1989, EPA proposes to fund the stratospheric ozone depletion research program at $8,610,100 and 10 workyears, an increase of $7,273,300 and 7 workyears above the FY 88 level. Research planned includes:

1) Studies on the effects of ultraviolet radiation on one Atlantic coast and one Pacific coast fisheries ecosystem. The data collected will be used to obtain quantitative projections regarding the effects of UV-B radiation on selected fisheries. EPA also plans to utilize NSF data on the Antarctic marine ecosystem.

2) Studies on the the human health effects of increased levels of UV-B radiation. In particular, the Agency will address immunological alterations, immunosuppression, and the biology/epidemiology of cataracts.

3) Data from the studies on the effects of UV-B radiation on terrestrial ecosystems including effects on major temperate zone tree species and major crops will be integrated into EPA's assessment. This work will be closely coordinated with the Department of Agriculture to ensure that the data needed to respond to the requirements of the Montreal Protocol is provided.

4) Evaluations of alternative technologies to reduce reliance on chlorofluorocarbons. These evaluations will place EPA in a position to present unbiased testing data to other nations who are trying to reduce CFC emissions.

5) Studies on the effects of ultraviolet radiation on possible changes in production of ozone and other air pollutants at the surface of the earth (including such welfare effects as degradation of natural resources, visibility impairment, and materials damage).

EPA plans to work closely with the Federal agencies involved in stratospheric ozone depletion research. The following are examples of areas where EPA will need to work cooperatively with other agencies:

- ° NASA and NOAA monitor and collect data from major space and ground networks. We expect to do some research in ground instrumentation measurements of UV-B for monitoring but do not anticipate these small systems will serve our research needs. Therefore, for major long term networks and space measurements we depend on cooperative efforts with NASA, NOAA and other agencies.
- ° The impact of increased UV-B on air quality and chemistry is clearly an EPA mission as is control technology dealing with pollutant reduction. We are devoting some effort toward substitute chemicals for CFC's and for certain uses (e.g. insulation, food packaging, and refrigeration) we coordinate with the Department of Energy.

We are sensitive to the diverse nature of our scientific needs and to the need to optimize our research efforts to produce high quality data. We have, as a result, a built-in need to coordinate with other Federal agencies whose scientific expertise and technical skill diversity are larger than ours. We have consistently done this in the past and will continue to in the future.

NARROWLY FOCUSED INITIATIVES

Question: Your statement criticizes "narrowly focused targeted Congressional initiatives" which resulted in sacrificing critical needs identified by EPA. Since, fortunately or unfortunately, I'm innocent of this charge I would like you to identify the specific items you are protesting and their impact on your agency's own priorities.

Answer: The Congressional add-ons included in the Conference Report on the FY 1988 Appropriations Bill consist of projects which provide local benefits or special treatment, rather than addressing needs of national significance. To accommodate these projects required that EPA also apply general reductions to its appropriations accounts. In our Salaries and Expenses account a uniform two percent reduction was taken in all programs. In the Abatement, Control and Compliance appropriation, a 1.8 percent reduction was applied across-the-board including our State grants. The effect of the Congressional add-ons on our base program can be measured by the impact these reductions had on our appropriation accounts and the activities of national significance that could not be undertaken.

ACID RAIN LEGISLATION

Question: A couple of months ago, Chemical and Engineering News ran an article entitled "EPA's Thomas Faces Demanding Final Year" and acid rain legislation was identified as the issue likely to be one of the fiercest battles between Congress and EPA. You are quoted as saying: "I don't want acid rain legislation."

Please elaborate on that remark and your reasons for such flat out opposition.

Answer: The correct meaning of my statement was that I don't believe acid rain legislation is justified at this time. In my opinion, we should allow the Congressionally-mandated 10-year Federal research program to run its course, i.e. through FY 1990. Research results to date are inconclusive to support further statutory authorities for controling air emissions that contribute to acid rain. Furthermore, we can wait until FY 1990 for research results without any fear of an environmental catastrophe.

- Research indicates that acid deposition has contributed to the acidification of some lakes in the eastern United States. However, research has not yet been able to predict future acidification levels of these lakes. There is, however, mounting evidence that in the northeastern U.S., at least, acidification of surface waters would not increase if emission and deposition levels do not increase. We expect to complete research in 1989 that will verify these predictions.

- Research is ongoing to determine whether acid rain legislation will reduce the risk of damage to forests. Based on current scientific knowledge, oxidants, nitrates, or natural factors are as likely causes of forest decline and damage as are sulfates. Research also indicates that without an increase in air emission and deposition levels, forest damage would not increase.

In view of these facts, I do not support acid rain legislation now. New legislation could require the expenditure of billions of taxpayers' dollars unnecessarily because either future problems anticipated did not occur or the wrong air pollutant was controlled.

GLOBAL CLIMATE CHANGE

Question: Last year, Congress enacted the Global Climate Protection Act, which mandates that the President, through the EPA, will be responsible for developing and proposing to Congress a coordinated national policy on global climate change.

Could you explain the plans you have for generating such an important policy recommendation to the President? Also, what type of role will EPA play in such a coordinated national policy, ... is it the lead agency on this matter?

Answer: The Administrator of EPA has formed an Interagency Committee on Global Climate Protection as the first step in implementing the Global Climate Protection Act of 1987. The Administrator has invited the following departments to participate in this committee: Commerce, NSF, NASA, Interior, Energy, State, Agriculture and CEQ. As we understand the Act, EPA is responsible for developing a national policy, but obviously the complexity of this issue requires a policy which is coordinated in conjunction with many other agencies.

CONSTRUCTION GRANTS

Question: Since 1979, Congress has made several changes to the construction grants program to facilitate increased State responsibilities and a reduced Federal role in financing wastewater treatment construction projects. Construction grant funding is scheduled to end after 1990, yet your 1989 budget submission includes funding for 5,000 active construction projects. Please explain what steps EPA is taking to ensure smooth transfer of close-out and maintenance responsibilities to States?

Answer: The completion and closeout of construction grant projects has been an EPA priority for the last five years. During this timeframe, active projects (as currently defined) have decreased from over 7,000 to roughly 5,000.

EPA has delegated essentially all of the remaining project completion/closeout work to the States, although EPA is still handling a few closeouts where the States were not involved earlier in the projects. We have established performance measures for our Regional Offices in the Agency's management accountability system. Regions negotiate annual completion/closeout accomplishments by the State under their section 205(g) state management assistance grant awards.

Since section 205(g) State funding will end totally with the last construction grant appropriation in FY 1990, in order to better assure the States' ability to effectively manage their active construction grant projects to successful completion and closeout, we have restricted the uses of section 205(g) funds to only construction grant management activities.

CENTER FOR AUTO SAFETY STUDY

Question: According to a study by the Center for Auto Safety, summarized by the Washington Post in the April 4th edition, "increasing production of high-volatility gasoline to prevent engine knock has resulted in a new and significant source of air pollution." Please explain the steps EPA is taking or will take in response to this potential cause of air pollution?

Answer: EPA proposed rules to control the volatility of gasoline on August 19, 1987. The public comment period closed on February 11, 1988. As soon as all the comments and issues are assessed, EPA will proceed with a final rule to control excess fuel volatility.

SUPERFUND REMEDIAL ACTIONS

Question: As you know, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1980, charges EPA with the responsibility of providing short-term emergency and long-term clean-up responses to the release of hazardous substances, pollutants, and contaminants. Short-term emergency responses are generally referred to as response actions and more long-term, permanent responses as removal actions. My question concerns remedial actions taken on sites selected from the National Priorities List (NPL). Your agency's FY 1989 budget proposal includes 70 new remedial actions taken on sites selected from the NPL.

What funding is necessary to initiate remedial action on these 70 additional sites?

Answer: In FY 1989 the Agency plans to allocate $480 million to initiate remedial actions at 50 new fund financed sites and $3.5 million for 35 new sites where the Agency is conducting oversight of responsible party cleanup.

Question: How many sites did the agency select from the NPL for remedial action in 1988? How many of those remedial actions are complete?

Answer: The Agency, through negotiations with Regions as part of the Superfund Comprehensive Accomplishments Plan (SCAP), will begin 49 fund financed remedial actions in FY 88; all are sites on the National Priorities List (NPL). The average length of time to complete a remedial action is ten quarters; therefore, none of the FY 88 actions have been completed.

Question: Are these data available for remedial actions taken on sites since 1980? What is the average length of time from selection of site to commencement of the remedial action?

Answer: Data on all remedial activity has been collected since 1980 and is available from the Agency's comprehensive database management system (CERCLIS). CERCLIS contains historical data as well as budgeting, planning, and tracking information.

INTERAGENCY SUPPORT - FEMA OVERLAP

Question: Your 1989 budget request calls for "continued support for the on-going activities of other Federal Agencies supporting the Superfund Program." It is my understanding that in 1988, EPA revised the National Contingency Plan (NCP) making FEMA's role in the removal of hazardous wastes, particularly hazardous wastes, more discretionary.

Do you agree with this latter statement?

Answer: EPA has not yet completed revising the NCP. However, FEMA's role in hazardous substance response is primarily to provide relocation assistance; the revised NCP would not give FEMA more discretion than it already has under existing authorities.

Question: Please explain the actions taken by EPA to abate hazardous wastes, in particular radiological wastes, and identify the potential areas of overlap with actions taken by FEMA?

Answer: Sites on the National Priorities List (NPL) that contain radiological waste are investigated and remediated according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1980, the NCP, and the processes outlined in policy directives and guidance on this issue. This is the same procedure followed for Superfund sites that do not involve radiological wastes. The NCP authorizes the Department of Energy to provide advice in the removal and disposal of radioactive contamination. EPA is conducting a study related to radio-active materials at Superfund sites to assess what problems, if any, may arise when treatment systems associated with soil-gas or ground water extraction collect and concentrate in naturally-occurring radionuclides. A background study has been initiated and currently operating systems are being evaluated. In addition, guidelines on sampling and evaluating potential hazards from naturally-occurring radionuclides at Superfund sites will be prepared.

Through CERCLA, EPA has the authority to respond to releases or threats of releases of hazardous substances that pose a danger to public health or the environment. EPA may request, under an established interagency agreement, that FEMA provide relocation support during a Superfund response action. Each Agency's roles and responsibilities in a response action are clear, and there are no operational overlaps or problems.

NARROWLY FOCUSED INITIATIVES

Question: Your statement criticizes "narrowly focused targeted Congressional initiatives" which resulted in sacrificing critical needs identified by EPA. Since, fortunately or unfortunately, I'm innocent of this charge I would like you to identify the specific items you are protesting and their impact on your agency's own priorities.

Answer: The Congressional add-ons included in the Conference Report on the FY 1988 Appropriations Bill consist of projects which provide local benefits or special treatment, rather than addressing needs of national significance. To accommodate these projects required that EPA also apply general reductions to its appropriations accounts. In our Salaries and Expenses account a uniform two percent reduction was taken in all programs. In the Abatement, Control and Compliance appropriation, a 1.8 percent reduction was applied across-the-board including our State grants. The effect of the Congressional add-ons on our base program can be measured by the impact these reductions had on our appropriation accounts and the activities of national significance that could not be undertaken.

QUESTIONS SUBMITTED BY SENATOR D'AMATO

SUPERFUND ALLOCATION

Question: In your statement you mentioned that you are requesting $1.6 billion for Superfund. How much of that will go to Region 2? Is the $1.6 billion evenly distributed among the Regions? If not, how is the money allocated?

Answer: Plans for the allocation of FY 89 resources among the Regions have not been developed. The principal mechanism for this allocation is the Superfund Comprehensive Accomplishments Plan (SCAP). There is no possibility that resources will be evenly distributed among the Regions given the varying levels of Regional site response activity and the uneven distribution of National Priorities List sites. The initial FY 89 allocation will be formulated in July-August based on anticipated project schedules and funding needs. This allocation will be revised (on a quarterly basis) during the year as estimates of funding needs and site schedules are updated.

Question: In New York State, there are 67 sites on the National Priorities List. Of these 67, 7 have not yet received any funding. What are the prospects that these sites will receive the needed funding to move ahead with clean up next fiscal year?

Answer: Of the 67 sites on the National Priorities List in New York State, 40 received funding in FY 87; an additional 15 will be funded in FY 88 and in FY 89. The remaining 12 sites have not received Trust Fund resources for remedial work for the following reasons; 1) responsible party searches are being conducted at five sites; 2) responsible parties are performing remedial work at four sites; 3) the State of New York is conducting enforcement work at two sites; and 4) the last site is a Federal Facility (by statute, EPA is prohibited from using Trust Fund monies to conduct remedial action at a Federal Facility). Thus, the only sites where the source of funding is in question are the five currently undergoing the search process for responsible party. Pending the completion of these searches, these sites will be funded.

SUPERFUND COST RECOVERY

Question: In your statement you mention that EPA has broadened its enforcement efforts under the Superfund Amendments and Reauthorization Act of 1986 (SARA). How much money is recovered from responsible party settlements and where does the money go?

Answer: The program has received $77.5 million in accounts receivable for cost recovery. In addition, cases valued at $258 million were referred to the Department of Justice for litigation through the end of February. These recovered funds are returned to the Hazardous Substances Superfund to support future appropriations.

CONSTRUCTION GRANTS FUNDING

Question: When Congress overrode the President's veto on the Clean Water Act back in January of 1987, it sent a clear message to the President that Federal assistance is desperately needed in cleaning up our nation's water and in constructing sewage treatment facilities. I recently cosponsored a resolution which rejects the Administration's 1989 Fiscal Year funding proposal for the Clean Water Act's construction grants program. The Clean Water Act authorized $2.4 billion for Fiscal Year 1989. The Administration, however, has proposed only $1.5 billion. This ridiculously low proposal is detrimental to the nation, and is particularly devastating to my own State, New York. New York's share of these funds is 11.16 percent. A $1.5 billion request will yield only $167.4 million to New York. This translates to a loss of $89.7 million in Fiscal Year 1989 alone! The Congressionally authorized $2.4 billion will yield $267 million to New York. Would you please explain why the Administration has consistently ignored overwhelming Congressional support for the authorized funding levels included in the Clean Water Act?

Answer: The President's proposed $12 billion phase-out program provides sufficient funds to complete all on-going projects, bring significant noncomplying facilities back into compliance with the Clean Water Act, and capitalize new State Revolving Fund programs.

The Agency's request of $1.5 billion is consistent with the President's proposed $12 billion phase-out of this program. The Agency received appropriations of $2.36 billion for construction grants in 1987 and $2.30 billion in 1988. These actual appropriation levels were larger than our requests of $2 billion for each of those years. The $1.5 billion request offsets the larger FY 1987 and 1988 appropriations to remain consistent with the President's $12 billion phase-out program.

OZONE AND CARBON MONOXIDE NON-ATTAINMENT

Question: Back in November of 1987, EPA came out with its Post-1987 Ozone/Carbon Monoxide Policy which attempted to address Ozone and Carbon Monoxide non-attainment areas after the Clean Air Act deadline expired on December 31, 1987. What authority does the EPA have to enact and enforce this policy?

Answer: EPA proposed its policy of November 24, 1987, under the authority of the existing requirements of the Clean Air Act.

The passage of the 1987 statutory attainment date did not remove the Agency's authority to proceed to require states with continuing air quality problems to do new planning to correct those problems EPA historically has interpreted the statute as requiring states to put together plans that projected attainment by the statutory date, not as requiring actual attainment by that date. Thus, for those States that put together such plans, the cure for the failure of those plans actually to bring about attainment is not the imposition of sanctions or the removal of all of EPA's authority, but rather for EPA to call, under the existing authority of section 110(a)(2)(H) of the Act, for the affected States to revise their plans to provide for attainment by the substitute dates derived from section 110. This is the approach EPA followed after areas subject to the 1982 attainment date failed to attain by that date. Moreover, Congress's enactment of a rider to the FY 1984 budget bill supported that approach.

As for States that did not submit plans projecting attainment by the 1987 date, the passage of that date produces only one change in the statute -- namely, the deletion of that date on the ground that it is now physically impossible for such States to plan for attainment by then. Now EPA's task is to decide what substitute future date applies to these areas. The November proposal explains in detail the Agency's approach of relying on the planning periods set forth in section 110 and Part D of the Act to create new planning dates for these areas. EPA will then use its authority to call for such States to do new planning to provide for attainment by the new dates. Thus, EPA is merely formulating a sensible construction of the planning provisions of the Act in light of an event -- persistent nonattainment after 1987 -- that Congress did not foresee when it last amended the Act.

The other requirements of the November proposal are based on EPA's best interpretation of how the Act's planning and sanctions provisions should operate after 1987 and until Congress amends the law. EPA has accepted comments on those proposed interpretations and will ultimately be analyzing those comments and deciding when and how to proceed toward final action on the policy.

OCEAN DUMPING OF SEWAGE SLUDGE

Question: This past February, Region 2 Administrator Chris Daggett testified before the House Merchant Marine Committee regarding legislation which proposes to ban all ocean dumping of sewage sludge by 1991. In his statement, he mentioned the impending implementation of an ocean dumping surveillance system which would be installed on all barges that haul sewage sludge out to the EPA designated 106-Mile Site. What is the status of this plan?

Answer: By May 15, 1988, twelve of the twenty sewage sludge barges will have the ocean dumping surveillance system (ODSS) installed under the supervision of the U.S. Coast Guard. We anticipate that the remaining eight barges will have the ODSS installed by the end of this year.

QUESTIONS SUBMITTED BY SENATOR DOMENICI

EPA USER FEES

Question: What types of user fees does EPA collect? Is the Agency planning to investigate or implement any new user fees in 1989 or the near future?

Answer: At the present time, EPA collects user fees for conducting Pesticides tolerance petition reviews, for providing information to the public in accordance with the Freedom of Information Act (FOIA), and for processing ocean disposal permit applications.

The Agency expects to implement three new fee programs in FY 1988 -- Pesticides registration fees, Toxics premanufacture notice (PMN) fees, and fees for quality control/performance evaluation samples provided under the Water Quality and Drinking Water programs. The Agency also expects to propose, in FY 1989, a new fee program for ocean disposal permits in conjunction with the proposal of new regulations for the overall Ocean Disposal program.

In addition to these four fees, eight other fee programs are under consideration for possible collection efforts and are being evaluated internally by Agency workgroups. The fee programs and the responsible program offices are listed below. Any Agency decision to proceed with rulemaking on these proposals would depend on the recommendations of the workgroups.

Office of Air and Radiation:

-- Radon Measurement Proficiency Program
-- Corporate Average Fuel Economy Certification
-- Automobile Emissions Certification
-- Stationary Source Permits

Office of Pesticides and Toxic Substances:

-- Pesticides Reregistration
-- Pesticides Applicator Certification

Office of Solid Waste and Emergency Response:

-- RCRA Waivers and Exemptions

Office of Water:

-- Fundamentally Different Factors Variance Applications (Sec. 301(o) of the CWA Amendments)

Question: How much do you estimate EPA will collect in user fees in FY 1989? What is that figure as a percentage of budget authority?

Answer: If pending fee proposals are issued according to the current schedule, the Agency currently estimates that FY 1989 revenues from user fees could total up to $24 million. This is approximately 1.4% of the Agency's budget authority for its operating programs (excludes Construction Grants, Superfund, and LUST).

Question: What percentage of EPA's budget is devoted to regulating coal-fired electricity?

Answer: Of the stationary source enforcement budget, Program Element FHA3A, 2 percent is devoted to regulating coal-fired electricity.

QUESTIONS SUBMITTED BY SENATOR GRASSLEY

IOWA GROUNDWATER PROTECTION

Question: Mr. Thomas, you mention in your testimony the continuation of the essential partnership with the States. My State, as you know, has been at the forefront of groundwater protection. Although the Iowa Groundwater Protection Act passed by the State legislature in 1987 relies extensively on State funds to meet new standards for groundwater, some of the program, however, relies on the important State-federal partnership. Specifically, the State pesticide grant program plays an important role in helping our State achieve its goals in the area of groundwater protection. Could you please tell me your intentions for the program under the FY 89 budget proposal?

Answer: In FY 1989, the FIFRA State cooperative enforcement agreement program will provide $8.7 million to more than 50 entities, including States, territories and Indian nations. These funds support compliance monitoring and enforcement activities conducted by the States, particularly inspections of pesticide use operations, pesticide producing facilities, and sampling of products in the marketplace, and preparing and prosecuting enforcement actions in response to detected violations of State or federal statutes.

The State cooperative enforcement agreement program specifies two general areas that the States should address in setting priorities for assessing compliance with pesticide regulations. There are national priorities (such as determining compliance with major pesticide cancellation actions) and there are State and local priorities. If groundwater protection is an important priority in any given State, the State should then list that as a priority enforcement concern when the State applies for cooperative agreement funding. A portion of cooperative agreement funding can then be allocated to the State to fund the State's program to enforce compliance with groundwater protection standards. Thus each State can identify major compliance concerns (e.g., farmworker safety, pesticide drift, endangered species protection, groundwater protection, etc.), tailor its compliance program, and receive cooperative agreement funds to address those concerns. However, States receiving FIFRA cooperative enforcement agreements must also, as a part of their compliance program, develop strategies for addressing national compliance priorities and commit to enforce all portions of FIFRA.

Question: Is this the type of program you were referring to when you mentioned the essential partnership with the States?

Answer: Yes, it is a very good example of how EPA can assist the States in ground-water protection.

QUESTIONS SUBMITTED BY SENATOR NICKLES

ASBESTOS IN SCHOOLS

Question: I have received a number of letters from school districts in Oklahoma that express their concern over the October 12, 1988 deadline for meeting the asbestos inspection and management plan requirements of the Asbestos Hazard Emergency Response Act of 1986. I sympathize with their concerns.

The schools in my state report a shortage in EPA-qualified contractors to conduct the inspections and draft the management plans. Moreover, these inspections and plans are expensive--placing a significant burden on the school districts in my state, which is still reeling from the drop in both oil and natural gas prices during 1986. Finally, the regulations were not issued in final form until December 1987.

I believe that the request for more time to comply with AHERA has merit. Senator Baucus has introduced a bill to extend the deadline for 12 months. My colleague on the Appropriations and Energy Committees, Senator Bumpers, is circulating a "dear colleague" seeking cosponsors for a bill to extend the deadlines for 6 months.

Mr. Thomas, what is your opinion of the reasonableness of the current deadlines, and do you prefer either a 6 month or a 1 year extension?

Answer: The Administration has not taken a position on the deadline extension issue. EPA shares the concerns reflected in current legislative proposals to extend the deadlines, especially the concern that some schools might submit unsatisfactory management plans in a hurried attempt to meet the statutory deadlines. Without doubt, the present deadlines for completed inspections and management plans represent a formidable challenge for schools.

To assist schools in meeting the deadline, EPA has taken several steps. First, EPA mailed the regulation to all schools last November and, in February, sent them an "LEA (Local Education Agencies) Guide" that explains in straightforward language the provisions of the regulation and what steps local education agencies should take to comply. EPA also presented a nationally broadcasted video teleconference on April 13 to explain to LEAs their responsibilities under AHERA. In the teleconference's interactive format, school officials from across the country could phone in questions on the new schools rule to a panel of Agency AHERA experts. In FY 1987, EPA provided $5 million to 11 States for assistance to schools in conducting inspections. In FY 1988, $12 million has been provided for this purpose and $3 million of additional funding will be awarded in June.

Question: Do you believe the Administration has requested adequate funding for the state grant programs under the 1984 Asbestos School Hazard Abatement Act or the Asbestos Hazard Emergency Response Act of 1986? Could you provide for the record the status of Oklahoma's grant request for 1987 and 1988 under both the Asbestos School Hazard Abatement Program and the Asbestos Hazard Emergency Response Act?

Answer: EPA did not request any funds for the Asbestos Hazard Abatement Act (ASHAA) loan and grant program for FY 1989. Previous Federal funding has greatly reduced the need for Federal intervention. Accordingly, these activities should now be the primary responsibility of State and local governments.

Oklahoma received funding under the ASHAA program as follows:

1985: $507,538
1986: $ 92,081
1987: No assistance requested, none granted.
1988: No assistance requested, none granted; EPA used 1987 requests to make 1988 awards.

TOTAL: $599,619

Oklahoma requested assistance under the Asbestos Inspection and Management Plan Assistance Program in the Fall of 1987 and the Spring of 1988 pursuant to AHERA.

In 1987, Oklahoma did not receive assistance because its application did not adequately describe how the State would ascertain the relative financial need of school districts which would receive grant funds from the State.

Oklahoma was not selected for funding during the initial phase of the 1988 award cycle in which $12 million of the $15 million available were distributed to 14 states. The 1988 application lacked detailed information on the State's plan to implement and oversee a grant program for subsidizing the costs of school district asbestos inspections. The remaining $3 million in available funds will be distributed before June of 1988 and the Oklahoma application will be reconsidered for funding in that cycle. Our Regional office will be working directly with the State to inform the proper officials of the requirements that must be reflected in the State's application in order to be considered for funding under this grant cycle.

QUESTION SUBMITTED BY SENATOR HATFIELD

STURGEON LAKE/CLEAN LAKES PROGRAM

Question: Sturgeon Lake is a large (2,928 acre) shallow lake located in the central part of the Sauvie Island, at the confluence of the Willamette and Columbia Rivers. The Lake annually provides hundreds of thousands of man-days of recreational boating, fishing, hunting and bird watching. In addition, parts of it serve as a crucial wintering and sanctuary area for migrating waterfowl. Peak waterfowl numbers in late fall and early summer reach upwards of 100,000 birds.

The maximum depth of the Lake is three feet with an average depth of one foot. The natural inflow of Columbia River water was through Dairy Creek Channel which has been blocked by dikes since the 1940's. Currently water flows in and out of the Lake through the Gilbert River at the northern end of the Lake. Sediment laden water that flows into the Lake deposits the sediment load before flowing out again. Much of the sediment deposit remains suspended in the Lake due to wind, wave and tidal action. This situation has caused Sturgeon Lake to decrease in depth and productivity, limiting aquatic life and recreational use of the Lake. In addition, shoreline vegetation is encroaching into the Lake along the perimeter. In short, the Lake is dying rapidly.

An E.P.A. Phase I diagnostic and feasibility study completed in 1932 recommended dredging of Dairy Creek to open the channel to the Columbia River and increase the flowing capability of the Lake. It is currently the site of an ongoing Phase II Clean Lakes Restoration Program. A grant was awarded in 1984 and a supplemental grant awarded in 1986 to increase the flushing through Sturgeon Lake facilitating a long-term decrease in sedimentation and an increase in Lake depth. The project is now about 80 percent completed; however, an additional $366,000 is needed in FY 1988 to see the project through to completion. Over $500,000 has been spent to date and unless the project can be completed this summer and fall, much of the work already completed will be negated and the funds will be wasted.

In light of the past support for this project and the fact that without additional funds, this support will have been wasted, what does E.P.A. have to assist this project in FY 1988?

Answer: We agree that this project needs extensive dredging and shoreline stabilization work and that, while much has been done, much more needs to be done to protect the improvements which have been made. However, the Agency believes that this project has received sufficient Federal funds to demonstrate the appropriate abatement methodology and that the additional dredging should be supported with State and/or local funds.

QUESTIONS SUBMITTED BY SENATOR INOUYE

GREENHOUSE WARMING

Question: All available recent studies on the reality and potential effect of greenhouse warming point out the seriousness of the long-term impact on civilization. The Congress has recognized this problem, and has year after year augmented requested funds to study this looming crisis. What was the total Federal expenditure last year on this subject?

Answer: The total Federal government expenditure for climate research according to the National Climate Program Office is approximately $130 million in fiscal year 1988. These resources include research on short and medium range weather forecasting and efforts to apply weather information to such areas as agricultural productivity. Research expenditures which are focused directly on the greenhouse problem total about $30 million in agencies such as DOE, NSF, NASA, NOAA, and EPA.

Question: At this phase it makes every sense to first confirm whether the greenhouse effect is indeed real. As such, I would imagine that the lion's share of funding has been allocated to merely monitoring and studying the issue. However, I would think that some small percentage of the effort should go to remediation strategies... that is, how best to turn around this potentially dangerous situation to prevent serious warming. Of the sum indicated in question #1, how much was spent directly on remediation? In your fiscal year 1989 request how much have you set aside for remediation experimentation and strategizing? What are your plans for fiscal year 1990?

Answer: We cannot provide an estimate of the total Federal budget for remediation strategies. In EPA, we plan to spend approximately $1.6 million in fiscal year 1988 and $2.3 million in fiscal year 1989 on this subject. The Office of Research and Development supports this effort through research on control technologies for criteria pollutants. The work is directed at examining climate impacts and potential strategies for adapting and limiting climate change. Our current plans are to continue these activities in fiscal year 1990 although the specific level of effort is yet to be determined.

Question: On a related matter, the oceans represent a greenhouse gas sink of largely unknown proportions. My scientific constituency tells me that much still needs to be researched on the effect of the ocean. In your fiscal '89 request, how much are you providing for research related to the effect of the ocean?

Answer: The role of the ocean is an important factor in the greenhouse gas problem. The oceans are a sink for heat, hence, serve to slow the rate of warming and the oceans serve as a sink for atmospheric CO_2 and other trace gases. We have a great deal to learn about ocean circulation, how the oceans are coupled to the atmosphere, the impact of climate change on marine life in the oceans, and the impacts of sea level rise. In EPA, we have done several studies to assess the importance of sea level on beaches, wetlands, and coastal regions. Major ocean research programs are the reponsibility of agenices such as NOAA, NSF and DOE. In fiscal year 1989, EPA expects to support approximately $250 thousand on ocean analyses related to climate change.

QUESTIONS SUBMITTED BY SENATOR McCLURE

ECOSYSTEM RESOURCES

Question: The Forest Service and the U.S. Fish and Wildlife Service have been conducting research to determine the ecological health of important landscape ecosystems within the United States. This research has reached a point where I feel additional work indicating the status and trends of ecosystem resources, as well as levels and trends of chemical pollutants to which these ecosystems are exposed, is necessary.

As the Administrator of the EPA, how important do you think it is to establish the status of health of ecosystem resources in the United States?

Answer: I think that it is important for the EPA to study and establish the status and health of the nation's ecological resources. Over the past several years, I have begun to focus the attention of my senior managers on this important environmental challenge. A group of senior management and scientific personnel was assembled to study critical areas of future interest for the Agency. The report, entitled "Unfinished Business," identified ecological research, monitoring and assessment as areas of considerable uncertainty and of great significance to our present and future responsibilities. Additionally, members of the Science Advisory Board have expressed to me on several occasions their interest in and recommendations for strengthening our ecological resource assessment capabilities.

My strong convictions that the EPA needs to aggressively pursue this difficult goal of ecosystem resource assessment stem from the many environmental regulations that we administer. The majority of our legislative mandates give the EPA the authority to permit or to allow the release of chemicals or other anthropogenic stress into our environment. Although accurate records are kept of the issuance of permits, it is difficult to assess the cumulative impacts of the multiple allowable insults under all our authorities. Simply stated, an Agency which permits human stress on parts of our environment should have the ability to assess the status and trends of ecological resources as a whole.

Question: Can we establish the health of ecosystem resources in the United States through our existing data collection network?

Answer: There are many ecological, biological and chemical data collection networks operational in the United States currently and we may be able to utilize some of these data to help in the assessment of ecological resources. These data sets and bases are maintained by the EPA and other Federal Agencies and departments, States and local authorities. A project to assess the usefulness of these data is in the planning stages. Preliminary indications are that the use of these existing data will be quite complicated and pose difficult problems. These data sets and bases have been prepared in response to specific needs and their integration raises many scientific and quality assurance questions.

Question: Do you have any preliminary plans to develop a program on the status of the health of our ecosystem resources? If so, please submit these plans, along with funding recommendations, to the Subcommittee.

Answer: We are in the very early stages of developing a research strategy and plan to study and assess ecological resources. This is a highly technical area which is in its scientific infancy, but we feel that sufficient research progress has been made in the past few years for us to begin to plan such a program. I welcome the Senator's interest in this area.

QUESTIONS SUBMITTED BY SENATOR BURDICK

ACID RAIN DEPOSITION MODEL

Question: I am told that a recent review of the methodology utilized in the Regional Acid Deposition Model suggests that several potential problem areas may exist with regard to the effects of cumulus clouds on the transport, transformation, and mixing of pollutants. It is my understanding that the scientists who reviewed the project expressed reservations about the Model because parts of it had been derived from observational programs of limited regional and seasonal scope. (Report on the Peer Review of the Regional Acid Deposition Model (RADM), Research and Evaluation Association, 1987, p. 23.). How does the Environmental Protection Agency intend to correct the shortcomings in the model?

Answer: EPA is striving to improve the utility of the Regional Acid Deposition Model (RADM) by collecting broad field data. Two field programs now being conducted by EPA and DOE will provide data for evaluation of the RADM and the Regional Scavenging Module (RSM). First, EPA will conduct two intensive studies during the Model Evaluation Field Study to provide major information on cloud transports over horizontal distances commensurate with the RADM grid resolution. Second, the Department of Energy Processing of Emissions by Clouds and Precipitation (PRECP) program is conducting major field studies to investigate cumulus processes on the individual cloud scale and to make comparison with RSM. This information is available to EPA investigators for comparison with model results.

Question: How does the Environmental Protection Agency plan to pursue the study of the effects of cumulus clouds on the transport, transformation, and mixing of pollutants. What would be the estimated cost of this study?

Answer: EPA has had a vigorous and expansive program, both theoretical and experimental, directed toward the study of cumulus clouds and their effects on pollutant formation and transport. This program has been funded under the aegis of NAPAP of which EPA is a member. Approximately $200,000 will be spent by EPA on theoretical and empirical studies.

COUNCIL ON ENVIRONMENTAL QUALITY

AND

OFFICE OF ENVIRONMENTAL QUALITY

STATEMENT OF A. ALAN HILL, CHAIRMAN, COUNCIL ON ENVIRONMENTAL QUALITY, AND DIRECTOR, OFFICE OF ENVIRONMENTAL QUALITY

BUDGET REQUEST

Senator PROXMIRE. We will now take testimony on the 1989 fiscal year budget request from the Council on Environmental Quality. With us today is Mr. Alan Hill, Chairman of the Council on Environmental Quality and the Director of the Office of Environmental Quality.

The Council is requesting, as I understand it, $870,000, an increase of $44,000 over current year funding. The largest increase of $21,000 is in environmental policy analysis and development.

Mr. Hill, it is a pleasure to welcome you and your colleagues to the subcommittee. I have read your statement, so we would ask you to please summarize it, if you wish. You understand that your full statement will be printed in the record in full. As I understand it, you are joined by Jacqueline Schafer, by William Mills, by Dinah Bear, and by Lucinda Swartz. Very good.

Mr. HILL. Thank, Mr. Chairman. Good morning. It seems to have been a long morning thus far.

Senator PROXMIRE. It has been a long morning. You have been very patient.

PREPARED STATEMENT

Mr. HILL. As you indicated, you have my statement. CEQ is requesting an appropriation of $870,000 for the coming fiscal year. I would appreciate very much having my full statement appear in the hearing record.

[The statement follows:]

STATEMENT OF A. ALAN HILL

Mr. Chairman and members of the subcommittee, thank you for the opportunity to discuss with you the President's Fiscal Year 1989 Budget Request for the Council on Environmental Quality and the Office of Environmental Quality. With me today are the other two Members of the Council: Dr. William Mills and Ms. Jacqueline Schafer. I would also like to introduce the General Counsel, Miss Dinah Bear, and the Deputy General Counsel, Ms. Lucinda Swartz.

The President is requesting an appropriation of $870,000 for CEQ/OEQ for FY 1989. This represents an approximately 5 percent increase in funding over that appropriated by Congress for FY 1988—an increase due almost entirely to mandated rises in personnel costs, including the requirements of the executive pay increase, civilian pay increase, and the Federal Employee Retirement System.

The Council's budget level for FY 1988 was reduced from a requested $862,000 to $826,000 as a result of the constraints of the Gramm-Rudman-Hollings legislation. This reduction in funding necessitated a reduction in personnel. The level of funding requested for FY 1989 would allow CEQ to have its full complement of 13 FTE's.

Further adjustments are necessary to account for a slight increase in SLUC anticipated in FY 1989, and for communications. To offset these increased expenditures somewhat, decreases were made in the budget for printing, other services, and supplies. Expenditures for travel and transportation of things and for equipment remain at the same level as in FY 1988.

In short, this is not a request for additional funding to implement new programs. Rather, it reflects recognition of the resources needed to operate the agency at the 13 FTE level. This proposed appropriation level reflects a budget which will enable the agency to fulfill its statutory objectives, yet was developed with deficit reduction objectives in mind.

This concludes my prepared statement. The Members of the Council and I will be happy to answer any questions you may have regarding the activities of the Council or the FY 1989 Budget Request.

ANNUAL REPORT

Senator PROXMIRE. That is terrific. That is the best statement we have had in years. [Laughter.]

You are asking for $870,000 for fiscal 1989, an increase of $44,000 over fiscal 1988. Mr. Hill, in your justifications you indicated that a major responsibility of CEQ/OEQ is to collect information and analyze data concerning conditions and trends in the Nation's environmental quality.

This information is made available through the annual environmental quality report, as I understand it. Last year, you discussed the timeliness of the report with Senator Mikulski and indicated that you and Ms. Schafer had come up with a plan to accelerate production of the annual environmental quality reports. You said that the 1986 reports would be published in late fall 1987; the 1987 report would be published in early spring of 1988; and the 1988 report would be published on time at the end of 1988.

Are you on schedule?

Mr. HILL. No; we are not. Let me ask Jackee Schafer to explain. She is managing that project.

Senator PROXMIRE. Very good.

Ms. SCHAFER. Mr. Chairman, it is still my goal to publish three environmental quality reports prior to the end of this calendar year. The plan for producing that kind of result is to produce a trilogy designed to focus on specific environmental classes named in the National Environmental Policy Act annual report requirement; namely, the air; the various aquatic environments, fresh water, ocean, marine environments and estuaries; and the various land categories, wetlands, drylands, forests, croplands, and range.

We are behind, principally, for production reasons. We lost a couple of staff members in the course of the year, which has slowed us down a little bit, but we have in-house the written materials to produce the first of the trilogy, and work is progressing on the others. I hope we will be able to do this by the end of the year.

Senator PROXMIRE. I would hope to be able to get as specific a response as possible. You said last year that the 1986 report would be published in late fall of 1987.

Ms. SCHAFER. We are behind on that schedule.

Senator PROXMIRE. What happened; has that been published?

Ms. SCHAFER. No; it has not.

Senator PROXMIRE. What is the timeframe for that now?

Ms. SCHAFER. As soon as we can get it physically produced and put into print.

Senator PROXMIRE. How long?

Ms. SCHAFER. I expect 1 to 2 months.

Senator PROXMIRE. The 1987 report will be published in early spring of 1988?

Ms. SCHAFER. That is going to have to wait until early fall. By the end of the calendar year, we expect to have the third portion of the trilogy of reports reach.

Senator PROXMIRE. The 1988 report by the end of this year, that will be the same as you said before?

Ms. SCHAFER. That is right; that is my goal.

BUDGET ALLOCATIONS

Senator PROXMIRE. You are asking for $470,000 for environmental policy analysis and development. That is an increase of $21,000 over current year funding. Last year, you requested $327,000 for environmental policy analysis and development, yet your fiscal 1988 allocation is for $449,000. That is a difference of $122,000.

Why was your fiscal 1988 request so far off base?

Mr. HILL. We are dealing, here, Senator, with a shift of how our resources were allocated by program, not anything other than that. Our increases for the coming year represent increased costs, personnel and benefit costs, the pay increase, and our benefit increase.

Senator PROXMIRE. The question was: Last year, you requested $327,000 for environmental policy analysis and development, and yet your fiscal 1988 allocation is for $449,000.

Mr. HILL. Yes.

Senator PROXMIRE. That is a difference of $122,000. Why was the fiscal 1988 request so far off?

Ms. SWARTZ. At best, our allocations are imprecise in trying to come up with how much money we have spent in a particular category.

I am not positive which numbers you are referring to. When our fiscal year 1989 budget was prepared, we looked at the actual figures that we spent in fiscal year 1987. We then looked at how we would allocate those in fiscal year 1988, and again, how we would like to allocate those in fiscal year 1989.

As Chairman Hill said, those are our allocations; they are not necessarily requests on how we are asking to spend our money. The increase in that particular category certainly is a factor of executive pay increases, because most of that category goes to the members' activities: the annual report; international activities; policy advice to the President.

In addition, we also had technical staff members who primarily assisted the Council members, and they are, although we initially indicated that a lot of their time would be spent in a different program category, in actuality, they really did spend a lot of their time assisting the Council members in what they do.

Senator PROXMIRE. Just for the record, I hope you will submit a specific analysis. Here is a 35-percent difference, roughly. It is an enormous difference in percentage terms. I realize we are dealing with relatively small amounts considering we have a $1 trillion federal budget, but still, it is taxpayers' money, and we would like to get as specific a justification for that huge percentage difference as you can give us.

You obviously can't say that you have a 35-percent increase because of an increase in pay or the usual increases, which are a small percentage.

Mr. HILL. No, but we have specific programs, Mr. Chairman, and as we allocate resources among those programs, you will see those shifts made. In other words, if we had one of the scientists working on a study, it would show up under one program. If that individual, as he did, wrote a chapter for the annual report, that would show up under a different program, and as those shifts are made back and forth, it is how we report the allocation of the resources available.

Senator PROXMIRE. Let me ask you a question now. It may be better that you answer this for the record so we get it as specific as possible.

In order to allocate the additional $122,000 to environmental policy analysis and development, you cut interagency coordination of environmental programs by $123,000 from the requested amount, and environmental data acquisition and assessment by $35,000. I realize that you received $36,000 less than you requested. However, I don't understand why you would cut two of your programs so sharply to supplement the other. How will the cuts you imposed affect your performance?

Mr. HILL. We will respond for the record in as clear a manner as possible.

Senator PROXMIRE. Very good. In fiscal 1986, you spent $309,000 for environmental policy analysis and development while you spent $464,000 in fiscal year 1987. That is an increase of about one-third; well, more than one-third.

What caused the sharp increase in actual expenditures?

Mr. HILL. We had more work in that category.

Senator PROXMIRE. Why did you have more work in that category?

Mr. HILL. I would have to go back and look at the specifics. We can provide that for the record.

CONTRACTING ACTIVITY

Senator PROXMIRE. Page 48 of your justifications indicates that the CEQ/OEQ management fund receives financial resources from other Federal agencies by means of interagency agreements. The funds are received on a contract basis. You state that the level of contracted activity for division 100, that is environmental policy development studies and projects, fell in 1987 and is expected to drop further in 1988. What was your estimated contract activity for 1988?

Mr. HILL. We have not had any new contracts thus far in the fiscal year.

Senator PROXMIRE. Do you anticipate any?

Mr. HILL. We have had some discussions with the National Library of Medicine. Dr. Mills can answer that. He has been carrying on those conversations.

Senator PROXMIRE. Very good.

Dr. MILLS. Senator, we are in the process of coordinating a research project with the National Library of Medicine designed to make compatible to all federal agencies' access to the national toxic substance data banks that we maintain at the National Library of Medicine. This will avoid duplication and cut out the need for each Federal agency maintaining its own data bank. We anticipate having this contract ready for bid towards the end of May or June.

SUBMITTED QUESTIONS

[The following questions were not asked at the hearing, but were submitted to the Council for response for the record:]

QUESTIONS SUBMITTED BY SENATOR PROXMIRE

1. You are requesting $470,000 for Environmental Policy Analysis and Development, an increase of $21,000 over current year funding. Last year you requested $327,000 for Environmental Policy Analysis and Development yet your fiscal year 1988 allocation is for $449,000. That is a difference of $122,000! Why was your fiscal year 1988 request so far off base?

In order to allocate the additional $122,000 to Environmental Policy Analysis and Development, you cut Interagency Coordination of Environmental Programs by $123,000 from the requested amount and Environmental Data Acquisition and Assessment by $35,000. I realize that you received $36,000 less than you requested. However, I don't understand why you would cut two of your programs so sharply to supplement the other. How will the cuts you imposed effect your performance?

In fiscal year 1986, you spent $309,000 for Environmental Policy Analysis and Development while you spent $464,000 in fiscal year 1987. What caused the sharp increase in actual expenditures?

Response: Some clarification appears to be necessary regarding the manner in which CEQ allocates its appropriated funds. For budget and planning purposes, CEQ has divided its statutorily-mandated program activities into three areas: (1) Environmental Policy Analysis and Development (advising the President on national policies to protect the environment, preparing the annual Environmental Quality Report, assisting with coordination of international environmental programs); (2) Interagency Coordination of Environmental Quality Programs (promulgating and interpreting regulations implementing NEPA, assisting in coordinating federal environmental programs involving more than one agency, participating in the OMB clearance process for proposed legislation, assisting federal agencies in achieving the goals of the Nuclear Waste Policy Act); and (3) Environmental Data Acquisition and Assessment (working to improve federal data and monitoring capabilities and coordinating numerous environmental research monitoring programs of the federal agencies).

These functions are somewhat overlapping and are not at all analogous, for example, to the distinct offices established at the Environmental Protection Agency for specific issues (e.g., air and radiation, water, hazardous waste and Superfund). Moreover, every CEQ staff member has duties which fall into more than one of these functions. For these reasons, allocating funds to each function is imprecise at best.

For actual figures, an estimate is made of how much time each Council Member and staff person spent in the last fiscal year performing each of the three functions. Based on each person's salary and benefits level and the time devoted to the program functions, an estimate of the total personnel costs for each function can be derived. To the estimated personnel costs are added an appropriate percentage of the costs of travel and transportation, postage and communications, printing, rent, and supplies.

For estimated allocations in the current and future fiscal years, estimates are made of the time each person is expected to devote to each function. Estimated personnel costs are again calculated and added to an appropriate percentage of other related costs.

In sum, the allocations presented in the CEQ/OEQ Fiscal Year 1989 Budget Request are the Council's best estimates of the time and costs incurred in each of the three functions. These are only estimates and do not represent a request that the funds appropriated by Congress be allocated in precisely the same manner. Indeed, because the allocations are simply estimates, changes in priorities or in activities the Council is called upon to initiate can alter the best estimates considerably.

To answer your specific inquiries,

* In our FY 1988 Budget Request (prepared in 1987), we estimated that in fiscal year 1988 $327,000 of the $862,000 requested would be allocated to the Environmental Policy Analysis and Development function. In our FY 1989 Budget Request, we estimated that we will spend $449,000 in FY 1988 for this particular function. As you noted, this is an increase of $122,000.

Part of this increase can be attributed to the increase in executive salaries and benefits which went into effect in March, 1987 and which was not anticipated in our FY 1988 request. In addition, we estimated in FY 1988 that our staffing level for this function would be approximately 4.4 FTEs. In preparing the FY 1989 Budget Request, we realized that staff time which we expected would be devoted to our third program function was in fact spent in activities more closely related to the Environmental Policy Analysis and Development function. For example, our two technical/scientific staff members spent considerable time either preparing work for the annual Environmental Quality Report or assisting with White House assignments to CEQ.

* Similarly, there is a difference of $123,000 between what we estimated in 1987 would be spent on Interagency Coordination of Environmental Programs in FY 1987 and what we estimated in 1988 was actually spent on this function in FY 1987. Again, this difference can be attributed to a change in staff assignments based on changing priorities and needs. In 1987, we thought that we would utilize 6.6 FTEs; in 1988, we realized that we would only utilize approximately 4.8 FTEs.

* In 1987, we estimated that we actually spent $309,000 for the Environmental Policy Analysis and Development function in FY 1986. In preparing our FY 1989 Budget Request (in 1988), we estimated that $464,000 was actually allocated to this function in FY 1987, an increase of $155,000. As noted above, our predictions are imprecise and the staff time devoted to each function can vary considerably from our estimates. In FY 1987 we utilized approximately 7.0 FTEs, while in FY 1986 we estimated that we only utilized 5.5 FTEs.

2. I understand you intend to issue a report on federal agency compliance with Executive Order No. 12114, Environmental Effects of Federal Actions Abroad, in fiscal year 1988. When can we expect to see the report?

Response: The Council has surveyed the federal agencies regarding their activities in furtherance of this Executive Order. Most of the agencies have responded. We expect the initial analysis of the survey responses to be completed by mid-May, with a final report and any recommendations available by the end of September, 1988.

3. You are requesting $300,000 for Interagency Coordination of Environmental Programs, an increase of $9,000 over current year funding. Page 26 of your justification indicates that the

Department of the Interior referred a dispute with the Department of the Navy to CEQ. What action do you intend to take on that referral.

Response: The Council held a public meeting on January 25, 1988, at which representatives of the United States Marine Corps, the National Park Service, the State of North Carolina, the affected local governments, and other concerned citizens presented their viewpoints regarding the Marine Corps' proposal to designate a portion of the Cape Lookout National Seashore as special use airspace for training maneuvers. At that meeting, the National Park Service suggested that CEQ undertake an independent analysis of the alternatives examined by the Marine Corps in its environmental impact statement prepared for the proposal. The Council is proceeding with that analysis. A site visit to the area is planned in late May, 1988.

4. Do you have any other referrals pending decision?

Response: There are no other referrals pending before the Council.

5. I understand that you are involved in risk assessment research. What I am curious about is why you were awarded $136,000 in fiscal year 1987 from the National Science Foundation for the development of a handbook on risk assessment? The award proposal you submitted to NSF states that you are working with "one or more contractors" to complete the handbook. Why didn't NSF make the award directly to the contractors?

Response: CEQ is involved with the application of risk assessment for health and environmental impact analyses under NEPA. The Council is not, however, involved specifically with the conduct of risk assessment research. CEQ and NSF believe that users and consumers have not had sufficient guidance material available which would create an understanding of the use of risk assessment in NEPA documentation. Since every federal agency is involved in preparing EAs and EISs, it was thought that CEQ should provide management for the development of a handbook on risk assessment which could aid them in their efforts.

6. EPA received $3 million for risk assessment research in fiscal year 1988. According to the award proposal I just mentioned, the handbook will provide "important information for both individual research scientists and for government research programs." It seems to me that EPA would be a direct benefactor of such a project. Why didn't you talk to them about handbook funding instead of going to the National Science Foundation?

Response: The handbook is directed toward users and consumers rather than producers of risk assessments. Consumers include environmental managers and other policy officials. Thus, we anticipate that all federal agencies, as well as others concerned with health and the environment, will be direct beneficiaries of the risk assessment handbook. EPA is only one of many agencies involved with risk assessment; the primary concern of that agency, however, has been with cancer risk assessment. The CEQ handbook will go beyond cancer risks and examine other environmental risks.

7. In fiscal year 1987, you held a series of meetings on problems of stratospheric ozone depletion and global warming. Your justification indicates that you intend to continue to hold public meetings in fiscal year 1988. What specific decisions have been made as a result of the meetings to date?

Response: Below is a list of the meetings the Council has held with respect to stratospheric ozone depletion and global warming.

April 7, 1987	**Dr. Jarvis Moyers**, Chief Atmospheric Scientist, National Science Foundation, on Climate Change Due to the Greenhouse Effect and Stratospheric Ozone Depletion
July 22, 1987	**Dr. Irving Mintzer**, Director of the Program in Energy Climate and Industrial Resources, World Resources Institute; and **Dr. S. Fred Singer**, Chief Scientist and Science Technology Advisor to the Secretary of the Department of Transportation, on Stratospheric Ozone Depletion and Climate Changes
July 24, 1987	**Dr. Daniel L. Albritton**, Director of the Aeronomy Laboratory of the National Oceanic and Atmospheric Administration's Environmental Research Laboratories, on Stratospheric Ozone Depletion and Climate Changes
October 6, 1987	**Dr. Margaret Kripke**, Chief of the Immunology Department at the University of Texas Cancer Center, on Human Health Effects of Stratospheric Ozone Depletion
October 22, 1987	**Dr. Alan Teramura**, Associate Professor, Department of Botany, University of Maryland, on Biological and Terrestrial Impacts of Stratospheric Ozone Depletion
February 16, 1988	**Dr. Robert Worrest**, Project Leader, Research Program on Global Climate Change, Environmental Protection Agency, on Aquatic Impacts of Stratospheric Ozone Depletion and Global Warming
March 29, 1988	**Dr. Alan D. Hecht**, Director of the National Climate Program Office, National Oceanic and Atmospheric Administration, on the Five Year Plan Issued by the Program Office

At least one more meeting is anticipated at which representatives from several federal agencies would provide insight to the Council on how these issues should be treated in environmental impact statements. The Council may also decide to hear presentations from representatives of organizations outside of the federal government.

After completing these meetings, the Council expects to consider the extent to which the anticipated impacts of these problems should be addressed in NEPA documentation, as well as the extent to which federal agencies should look at the potential for federal projects to affect greenhouse gas emissions or stratospheric ozone depletion.

One result of these deliberations could be the issuance of guidance to all federal agencies on this subject. Any guidance the Council issued would clarify federal agencies' existing responsibilities under NEPA and the CEQ regulations with respect to consideration of global warming and stratospheric ozone depletion.

8. Will the Council issue a report based on the discussions?

Response: As noted above, the Council may issue guidance to the federal agencies concerning the appropriate treatment of stratospheric ozone depletion and global warming in environmental impact statements in accordance with NEPA and the CEQ regulations.

9. When will the report be completed?

Response: Should the Council decide that regulatory guidance is needed, such a document would be issued in the first quarter of fiscal year 1989.

10. Your justification indicates that in fiscal year 1987 you continued implementation of the recommendations in your report, Report on Long-Term Environmental Research and Development. In order to implement one of your recommendations, you contracted with The Conservation Foundation to prepare an experts' report on the multimedia effects from a single pollutant. How will the report be used?

Response: The results of the report will be provided to the sponsoring agencies for review and use as appropriate to clarify approaches to multimedia effects from a single pollutant.

11. What will be the total cost of the report including the cost to EPA and the National Institute of Environmental Health Sciences?

Response: The cost of the report was approximately $75,000.

12. Mr. Hill, you are requesting $100,000 for Environmental Data Acquisition and Assessment, an increase of $14,000 over current year funding. Your justification implies that the additional $14,000 would allow CEQ/OEQ to update its own data instead of relying on personal contacts. Specifically, how would the $100,000 be used?

Response: In our Fiscal Year 1989 Budget Request, we attempted to estimate that portion of our requested budget which we would allocate to the function we have entitled Environmental Data Acquisition and Assessment. As noted in our budget justification, the objective of this function is to improve federal data and monitoring capabilities and to coordinate the numerous environmental research monitoring programs of the federal agencies.

In allocating $100,000 to this function, we assumed the services of 1.4 FTEs (approximately $80,000). The remaining $20,000 represents a proportional amount to cover the costs of rent, postage, communications, etc.

13. Would you be able to update your own data if you were funded at the requested level?

Response: The additional $14,000 which we estimate we would spend if funded at the $870,000 level requested would not allow us to update our own data. It would, however, allow us to devote more time to working with other federal agencies to use the data they have collected.

14. Mr. Hill, I understand that there were many problems identified during the development of the Environmental Trends Sourcebook and that you have assembled interagency workgroups to deal with these problems. What are the problems?

Response: As noted in our budget justification, problems were identified in the development of CEQ's second Environmental Trends Sourcebook. For example, some of the indicators are essentially economic, not environmental, making it difficult to assess impacts on the environment or environmental trends. In addition, each agency has its own reporting requirements which are geared to its own needs, not necessarily the assessment of national environmental trends. Further, in many instances, the timing of data collection efforts is inconsistent, making it difficult to make comparisons between related environmental indicators.

Having dealt with these problems, the Council wants to work to resolve as many as possible when the Environmental Trends Sourcebook is completed. Resolving the problems will involve the use of interagency work groups.

15. When do you expect results from the interagency groups?

Response: Given the breadth of their tasks, it is impossible and impractical to set a timetable for results. It is anticipated that a third Environmental Trends Sourcebook would be prepared and published in another five year time period; the efforts of the interagency groups to refine environmental indicators could expect to be seen in the development of that report.

16. I see that you are requesting $5,000 for supplies and materials, a decrease of 50% from current year funding. I think that is commendable! As you know, this Subcommittee oversees many budgets and if everyone could decrease their supplies and materials account by 50% it would be quite a savings. How will you manage to make such a substantial reduction in this area?

Response: Without wanting to gloss over our sincere efforts to simply spend less for pencils, paper, and other supplies, it should be noted that reducing spending is quite a bit easier when there are only 13 people involved. We were able to make a substantial reduction in fiscal year 1987 because the staff was conscious of our need to purchase computer equipment--every dollar saved in various object classifications, including supplies and materials, brought us closer to being able to bring our computer capability up to a more productive and efficient level. Since we were able to function effectively with lower funding for supplies in fiscal year 1987, we assumed we would be able to make a similar effort in fiscal years 1988 and 1989.

SUBCOMMITTEE RECESS

Senator PROXMIRE. Thank you very much, folks. The subcommittee will stand in recess until 10 a.m. Monday, April 18, when we will take testimony from the Department of Housing and Urban Development. The hearing will take place in this room. Thank you very much.

Mr. HILL. Thank you.

[Whereupon, at 11:50 a.m. Tuesday, April 12, the subcommittee was recessed to reconvene at 10 a.m., April 18.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

MONDAY, APRIL 18, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10 a.m. in room SD-124, Dirksen Senate Office Building, Hon. William Proxmire (chairman) presiding.

Present: Senators Proxmire, D'Amato, Domenici, Grassley, and Nickles.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

BUDGET REQUEST

Senator PROXMIRE. The subcommittee will come to order. Today, we take testimony from the Secretary of Housing and Urban Development, the Honorable Samuel Pierce, on the Department's fiscal year 1989 budget request. The administration is proposing a 1989 budget of about $11.6 billion or about $1.7 billion below the current appropriation.

Major reductions include cuts of $850 million in assisted housing, roughly $200 million in elderly housing construction funds, and $400 million in community development block grant support.

The administration is also recommending the termination of the Urban Development Action Program this year, recommendation with which I heartily concur, although I am the author of the law.

Secretary Pierce is not here at the moment, but let me just say that I notice that once again, the Department is placing a special emphasis on its voucher program. This concerns me, because the evidence is mounting that vouchers could add literally billions of dollars to the costs of housing low-income families. We will be discussing this issue after Secretary Pierce's statement is delivered. I also will take some time to discuss public housing modernization. I would think we both would agree that it makes more sense and costs less to maintain our existing low-income housing stock than to build new units.

Let me yield to my good friend and distinguished colleague from New York, Senator D'Amato.

PREPARED STATEMENT

Senator D'AMATO. Mr. Chairman, thank you for your graciousness. Let me say, Mr. Chairman, first, that I would like to submit my statement as if read in its entirety.

Senator PROXMIRE. Without objection, it will be printed in full.

Senator D'AMATO. I would like to have the opportunity to borrow from some parts of it.

[The statement follows:]

STATEMENT OF SENATOR D'AMATO

Mr. Chairman, I am pleased to welcome Secretary Pierce to the Appropriations Committee as we assess the needs of housing and community development programs in this country. Housing and community development are vital components of federal policy. They affect the lives of all citizens—ensuring that everyone has a safe, decent, and affordable housing and that our communities become vital mechanisms for economic growth and employment.

Since coming to the Senate in 1981, I have been a strong supporter of both the CDBG and UDAG programs. These programs were developed to revitalize our communities, both large and small. I firmly believe that the federal government must play a role in such development.

Many of our communities still suffer from economic distress. The CDBG and UDAG programs provide the needed impetus to stimulate growth, activity, and jobs. To further restrict or altogether eliminate these important programs would seriously limit development efforts in economically deprived communities across the country.

The President has proposed to cut or eliminate these programs for fiscal year 1989. Specifically, the administration has proposed to cut the CDBG program by 9 percent, from $2.8 billion to $2.48 billion. In addition, the President has proposed to eliminate the UDAG program. The UDAG program received approximately $225 million in fiscal year 1988 appropriations.

I oppose these reductions because I have seen first hand how these programs can be a major economic impetus to a distressed area. A recent example of this is a UDAG that was granted to a project in New York State. In January of this year, Schroon Lake, N.Y.—a town located in the once-thriving Adirondacks—was suffering from an unemployment rate of 18 percent. No signs for improvement or change were in the forseeable future.

A UDAG was granted to this area to construct a resort facility and conference center. This grant provided 475 construction jobs and over 200 permanent jobs for citizens of the area. With the creation of these jobs, new revenues will be generated in the community and employment will raise the level of self-esteem for residents and the community at large. Schroon Lake will be a different place because of the Urban Development Action Grant Program.

Similarly, the CDBG program helps localities and states fund local community development programs. These activities are directed toward neighborhood revitalization, economic development, and improved community facilities services. Like the UDAG program, CDBG funds generate jobs and provide vital economic development monies to local governments.

For these reasons, I will oppose further cuts in these programs. I will continue to support activities which benefit the economic development and housing needs of this nation.

Thank you, Mr. Chairman.

URBAN DEVELOPMENT ACTION GRANTS

Senator D'AMATO. Mr. Chairman, I don't think you should be modest or ashamed or anything else that would deprecate from your sponsorship of the urban development action grant legislation.

Senator PROXMIRE. I am not ashamed of it; I just think that we ought to Sunset it.

Senator D'AMATO. Let me, if I might, make some observations.

Senator PROXMIRE. Certainly.

Senator D'AMATO. I believe that there were many abuses in this program in the early days, some deliberately, some unintentionally; that there were people who should not have qualified; that there were examples of waste and extravagance of a failure to set adequate ratios of participation of private sector and public funds.

I might take this opportunity to be somewhat expansive as we wait for the Secretary, but the fact of the matter is that within the past several years, the program has been tightened considerably; that the funds that are generally made available are on a low-interest basis; that we have seen a wider, more equitable distribution and that they have played a significant role in bringing about substantial investment in downtown areas, in distressed areas, in rural communities that otherwise would not come about. So that while there may have been some initial shortcomings, I think that the totality of the program in its present form certainly outweighs those problems that we had at one time.

Senator PROXMIRE. Senator D'Amato, let me just say that you make a very good case, and I am sure this program has its merits. The trouble is, we just don't have the money. We have to make cuts wherever we can. As you know, we have eliminated revenue sharing, which is also an excellent program, and had its merits, but it seems to me that at a time when the deficits are enormous and we have to cut everything we possibly can, that here is a program that is very hard to justify in view of the fact that so much of the money goes into luxury office buildings and apartments and facilities.

While it does help to some extent to provide more employment, the fact is that unemployment is at the lowest level it has been in some time. It seems to me that if we are going to cut, we have to make some cuts that we don't like to make and that undoubtedly will result, in some cases, in programs not proceeding that should, but I am so concerned about the budget deficit that I think that we have to cut where we can.

Let me ask. The Secretary isn't here. I presume he will be coming later.

[DEPARTMENTAL NOTE: Secretary Pierce did not appear before the subcommittee on April 19, 1988, because of a previously scheduled appointment at the White House. Senate Appropriations subcommittee staff were advised of this appointment, and his absence was cleared beforehand.]

Senator PROXMIRE. Would you, sir, identify yourself?

Mr. COVITZ. Senator, I am Carl Covitz, the Under Secretary. Secretary Pierce is on his way, and in the meantime, I would be more than happy to answer questions that you have to get started. As you wish. He is on his way.

Senator PROXMIRE. I certainly have some questions here, but Senator D'Amato?

Senator D'AMATO. Mr. Chairman, I am not going to continue the dialog, because we will have an opportunity as its relates to UDAG, but again, I think it has been cut back about 350 percent over the years, and I think now the eligibility use has been tightened and toughened, and it does afford development in communities, very poor communities that otherwise would not have that development.

Mr. Chairman, let me point out a particular, not only question, but a quandary that I have. I see the Secretary has arrived.

Senator PROXMIRE. Mr. Secretary, why don't you come forward. You had a very able gentleman who is willing to answer questions in your absence, but we are delighted to have you. We will proceed in just a minute. Senator D'Amato has a further observation he would make to make.

Go ahead Senator D'Amato.

Senator D'AMATO. Mr. Secretary, it is good to see you.

Secretary PIERCE. Good to see you.

TWEENMILL HOUSE—SECTION 202 PROJECT

Senator D'AMATO. In the Housing and Community Development Act of 1987, Mr. Chairman, there is a provision which affects a 202 project in New York City. I know this is a rather small project; it is 40 units. It is called Tweenmill House. It was set up to finance the development of a housing project for those people who are disabled. It takes blind people, people in wheelchairs, et cetera.

For some 5 years, this Senator and this office have been attempting to get a breakthrough in this, and we have met nothing but red tape and delay. "We will look at it. We will look at it. We will look at it." Just this past week, I have been notified that some of my colleagues, Senator Grassley and Senator Harkin, have been informed that we are unable to apply the provisions of the 1987 Act at the present time. Because those particular provisions currently have no appropriated funds, they cannot be implemented.

Now, that is simply a lot of hogwash, because, Mr. Chairman, as you and I know, the Department can ask for reprogramming. It is unfair of me to place this as a question to the Secretary at this time, but I would like to have his commitment that they will examine this in the light of seeking a reprogramming for this project.

Now, this is sponsored by the Easter Seals; it is 40 units. It is no major developer. The property is there. I guess it is on 126th street up in Lexington.

We talk about safe, decent, affordable housing. It is ready to go. Mr. Secretary, would you examine this?

Senator PROXMIRE. Mr. Secretary, before you go on, let me just say that we are anxious to have you make your statement and we will give you time to do that, but Senator D'Amato did want to get that commitment from you if possible before he has to leave.

Secretary PIERCE. As I understand it, my General Counsel has been looking into this, and I would like for him to comment at this time.

SECTION 8 FAIR MARKET RENTS—TWEENMILL HOUSE

Mr. DORSEY. Mike Dorsey, General Counsel of the Department. Yes, Senator D'Amato, we have looked at this. It is possible to request a reprogramming for the 202 loan authority, and that would give us the authority to move ahead with the construction, but we can't reprogram to increase the section 8 FMR's. I understand that that is a more substantial problem. There isn't an appropriation for section 8 funding that would go above the FMR's. That would require additional legislation.

Senator PROXMIRE. Mr. Secretary, let me just say that before you came in, Senator D'Amato and I had a little difference of opinion on one part of the Urban Development Action Grant Program, and I wanted to commend you. I understand that the administration is recommending that we not go ahead with it. It is always painful when we dispense with a program.

At a time when we have the kind of deficit we have, we have to take some painful steps.

Senator D'AMATO. Mr. Chairman, I am going to be leaving this, but I am going to tell you something. This is one Senator who has hit a point of frustration as it relates to dealing with this problem, and I want to tell you something—I am not directing this at you, Mr. Secretary, but at the people we have been talking with and the General Counsel—because we have been around this mulberry for, now, 2 or 3 years, and for 6 months, once a week, my office has been in contact with your people as it relates to this.

You haven't even had the good grace to give us an answer. Now, the fact of the matter is that this answer is unacceptable. The fact of the matter is I would like to meet with you, because under that law you have the ability to reprogram for the FMR's, as well. Now, if you just say you don't want to go the program, that is fine. Let's let the Easter Seal people know that you don't want to do it, that you want to keep the money, that you just don't want to spend that kind of money for that program.

But let's not talk about that you cannot do it. The fact of the matter is our counsel indicates that you do have the ability under that language to appropriate the money. If you don't want to, that is OK; we will say that the Department doesn't want to do that. But don't deny the legislative ability to do that. I address that to your Counsel, Mr. Secretary, not yourself.

Senator PROXMIRE. Mr. Secretary, we are happy to have you now. We can all relax. [Laughter.]

Senator D'AMATO. It is going to be fortunate that I will leave, because I want to tell you something. I am really fed up with that kind of activity and that kind of answer. It is not in the spirit of the law, and for you to say, "We will go back and put this in with specificity" is absolutely nonsense. I will tell you something: We will let the Easter Seal people know that you are just making it impossible for this project to go. We talk about the sick, the disabled, the handicapped. We have a program, a project ready to go, and we have bureaucrats stopping it. This Senator thinks it is absolutely wrong. Thank you, Mr. Chairman.

Senator PROXMIRE. Mr. Secretary, go right ahead, sir.

STATEMENT OF HON. SAMUEL R. PIERCE, JR., SECRETARY OF HOUSING AND URBAN DEVELOPMENT

Secretary PIERCE. Thank you very much, Mr. Chairman, but before I begin my statement, I would like to say just a few words.

Mr. Chairman, I have served with you over a number of years—you much longer than I have—in the federal government, and you have served our country long and faithfully. I wish you well in your retirement. Although we have often disagreed, I respect your efforts to make sure we get the most assistance possible for the federal dollar. May your retirement years be as fulfilling as your honorable service in the Senate.

Senator PROXMIRE. Thank you very much, Mr. Secretary. I deeply appreciate that.

Secretary PIERCE. Now I will proceed with my statement.

SECRETARY PIERCE'S STATEMENT

Mr. Chairman and members of the committee, I am pleased to appear before you again to present HUD's budget for fiscal year 1989.

In developing this budget, as with previous budgets, I have kept in mind three guiding principles: First, individual rights and responsibilities belong to the poor as much as anyone else; second, the poor need not always remain poor, nor should we assume they will; and third, the poor often are capable of making their own decisions and improving their condition in life.

It is helpful to remind ourselves of these principles as we develop programs and budgets for future years. For, although low-income families sometimes need our help, that doesn't mean we should treat them as wards. We must guard against acting in ways that would relegate the poor to a permanent underclassed status. If we do things for people rather than with them, we may cross the line which separates helpful assistance from paternalism.

BUDGET TOTALS

The budget I present today keeps these principles in mind. My 1989 budget totals $13.6 billion in budget authority and $19 billion in outlays. These estimates do not include the impact of the administration's credit reform proposal, which would require an additional $2.6 billion in budget authority and outlays. We estimate also that we will need 12,913 staff-years to administer our programs.

My budget continues our steady increase of housing assistance to those in need while maintaining the restraint on federal spending which is required to meet our deficit reduction goals. In doing so, this budget is consistent with the priorities I set for the Department in 1981 and which we have pursued throughout both Reagan administrations.

We have focused our attention over the past 7 years on directly assisting needy families. I am pleased to say that by the end of the year, our efforts will have extended housing support to an additional 1.3 million families. In 1988, we are supporting 4.3 million families, and in 1989, this support will reach 4.4 million families.

This steady growth of assistance to low-income families demonstrates that compassion is compatible with responsible governance.

AFFORDABILITY OF HOUSING

The primary housing problem of low-income families nationwide is affordability, not availability, of decent housing. The Commerce Department reports that the 1987 rental vacancy rates were the highest in 20 years. The fourth quarter vacancy rate for 1987 was 7.8 percent, and it is significant that the rate for apartments renting between $200 and $249 per month was 8.4 percent. Generally, rental housing is available. With vouchers, we get low-income families into this housing, housing they need quickly.

REQUEST FOR VOUCHERS

Vouchers, a principal feature of our housing program, are a key ingredient in enabling the poor to help themselves. Vouchers give families the dignity of choice, offering them the opportunity to locate near family and friends, schools, churches, and jobs. With the private market supplying rental housing and with needy families using vouchers to rent housing, we can work toward our goal of a decent home for every American family.

Vouchers now help over 100,000 low-income families afford the housing they need, and by the fall, they will be assisting another 34,000 families. Recognizing the success of vouchers, Congress permanently authorized the program in the Housing and Community Development Act of 1987.

We request 100,000 new vouchers to build on this success. This roughly doubles what Congress approved in fiscal year 1988. In addition, we seek 7,000 new elderly and handicapped units and another 1,000 Indian housing units. This total of 108,000 represents an increase of 30 percent over the number of units funded in fiscal year 1988.

RENTAL REHABILITATION

We propose $150 million for the Rental Rehabilitation Program, which effectively benefits low-income households. Rehabilitation works. Ninety percent of all units are renting at or below fair market rents. And rents for 40 percent of the units are affordable to low-income families even without subsidy.

Mr. Chairman, I request deletion of language included by the House in the appropriations conference report last year which requires that families displaced by increased rental costs receive the same high priority for vouchers as families displaced from their housing by the rehabilitation itself.

The Housing and Community Development Act of 1987 includes language which ensures assistance for all physically-displaced families and requires PHA's to provide assistance for families paying more than 50 percent of adjusted income for rent. The 1987 Act and our regulations also authorize PHA's to use up to 10 percent of their resources to assist families paying between 30 and 50 percent of income for rent.

The act offers PHA's the flexibility to assist economically distressed families regardless of whether they are in rental rehab units or on waiting lists. My request to follow the authorization language inserted by the Senate will further your purpose and ours; that is, it will ensure that the rental rehab and voucher programs continue to help those most in need.

MODERNIZATION OF PUBLIC HOUSING

We also propose that Congress appropriate $1 billion for modernizing public and Indian housing facilities. The Housing and Community Development Act of 1987 simplified the modernization program so that public and Indian housing authorities will have greater control in planning their modernization activities and using these funds in future years. Before the new legislation can be implemented, however, Congress must approve the method for allocating modernization funds to local agencies.

We are developing recommendations for alternative allocation methods that will be provided to Congress well before the February 4, 1989, statutory deadline.

PUBLIC HOUSING OPERATING SUBSIDIES

We also request an appropriation of $1.5 billion for operating subsidies to support the operation of public and Indian housing projects. This 1989 request reflects two legislative proposals which would reduce the requirements somewhat. One would allow the Department to waive statutory rent rules for PHA's and IHA's that elect to forego future operating subsidies. This proposal would give those authorities more flexibility in setting rents for tenants by charging more or less for a unit, depending on its condition and location, rather than automatically increasing rents as tenant income increases.

Another proposal would build on the legislation provided in the 1987 Act to require social security numbers of housing assistance recipients and allow HUD to do income matching.

Our subsidized housing programs will also aid homeless families and individuals. We propose to continue using one-quarter of the proposed 7,000 section 202 units exclusively for the handicapped. For 1989, we plan to target a large share of those handicapped units for the homeless mentally ill. In addition, we are asking for an increase in the Supportive Housing Demonstration Program from $64 million to $75 million.

Senator PROXMIRE. Mr. Secretary, could you wrap it up in about a minute or two, summarize the remainder of your statement?

PREPARED STATEMENT

Secretary PIERCE. That would be a little difficult. Why don't I just stop here, and put my prepared statement in the record.

Senator PROXMIRE. Fine, very good, sir. It will be printed in full in the record.

[The statement follows:]

STATEMENT OF SECRETARY SAMUEL R. PIERCE, JR.

Mr. Chairman and members of the Committee, I am pleased to appear before you again to present HUD's Budget for fiscal year 1989.

In developing this Budget--as with previous budgets--I have kept in mind three guiding principles:

First, individual rights and responsibilities belong to the poor as much as anyone else;

Second, the poor need not always remain poor, nor should we assume they will;

And third, the poor often are capable of making their own decisions and improving their condition in life.

It is helpful to remind ourselves of these principles as we develop programs and budgets for future years. For, although low-income families sometimes need our help, that doesn't mean we should treat them as wards. We must guard against acting in ways that would relegate the poor to a permanent underclass status. If we do things for people...rather than with them...we may cross the line which separates helpful assistance from paternalism.

The Budget I present today keeps these principles in mind. My 1989 Budget totals $13.6 billion in budget authority and $19 billion in outlays. These estimates do not include the impact of the Administration's Credit Reform proposal, which would require an additional $2.6 billion in budget authority and outlays. We estimate also that we will need 12,913 staff-years to administer our programs.

My Budget continues our steady increase of housing assistance to those in need, while maintaining the restraint on Federal spending which is required to meet our deficit reduction goals. In doing so, this Budget is consistent with the priorities I set for the Department in 1981, and which we have pursued throughout both Reagan administrations.

We have focused our attention over the past seven years on directly assisting needy families. I am pleased to say that, by the end of the year, our efforts will have extended housing support to an additional 1.3 million families. In 1988 we are supporting 4.3 million families, and in 1989 this support will reach 4.4 million families.

This steady growth of assistance to low-income families demonstrates that compassion is compatible with responsible governance.

The primary housing problem of low-income families...nationwide ...is affordability, not availability, of decent housing. The Commerce Department reports that the 1987 rental vacancy rates were the highest in twenty years. The fourth quarter vacancy rate for 1987 was 7.8 percent, and it is significant that the rate for apartments renting between $200-249 per month was 8.4 percent. Generally, rental housing is available. With vouchers, we get low-income families into this housing...housing they need...quickly.

Vouchers...the principal feature of our Housing program...are a key ingredient in enabling the poor to help themselves. Vouchers give families the dignity of choice...offering them the opportunity to locate near family and friends, schools, churches, and jobs. With the private market supplying rental housing, and with needy families using vouchers to rent housing, we can work toward our goal of a decent home for every American family.

Vouchers now help over 100,000 low-income families afford the housing they need; and by the fall they will be assisting another 34,000 families. Recognizing the success of vouchers, Congress permanently authorized the program in the Housing and Community Development Act of 1987.

We request 100,000 new vouchers to build on this success. This roughly doubles what Congress approved in fiscal year 1988.

In addition, we seek 7,000 new elderly and handicapped units, and another 1,000 Indian housing units. This total of 108,000 represents an increase of 30 percent over the number of units funded in fiscal year 1988.

We propose $150 million for the Rental Rehabilitation program, which effectively benefits lower income households. Rehabilitation works. Ninety percent of all units are renting at or below fair market rents. And, rents for 40 percent of the units are affordable to low income families even without subsidy.

Mr. Chairman, I request deletion of language included by the House in the Appropriations Conference Report last year which requires that families displaced by increased rental costs receive the same high priority for vouchers as families displaced from their housing by the rehabilitation itself. The Housing and Community Development Act of 1987 includes language which ensures assistance for all physically displaced families and requires PHAs to provide assistance for families paying more than 50 percent of adjusted income for rent. The 1987 Act and our regulations also authorize PHAs to use up to 10 percent of their resources to assist families paying between 30 and 50 percent of income for rent.

The Act offers PHAs the flexibility to assist economically distressed families regardless of whether they are in rental rehab units or on waiting lists. My request to follow the authorization language inserted by the Senate will further your purpose and ours; that is, it will ensure that the Rental Rehab and Voucher programs continue to help those most in need.

We also propose that Congress appropriate one billion dollars for Modernizing public and Indian housing facilities. The Housing and Community Development Act of 1987 simplified the Modernization program so that public and Indian housing authorities will have greater control in planning their modernization activities and using these funds in future years. Before the new legislation can be implemented, however, Congress must approve the method for allocating modernization funds to local agencies. We are developing recommendations for alternative allocation methods that will be provided to Congress well before the February 4, 1989, statutory deadline.

We also request an appropriation of $1.5 billion for Operating Subsidies to support the operation of Public and Indian housing projects. This 1989 request reflects two legislative proposals which would reduce the requirements somewhat. One would allow the Department to waive statutory rent rules for PHAs and IHAs that elect to forego future operating subsidies. This proposal would give those authorities more flexibility in setting rents for tenants by charging more or less for a unit, depending on its condition and location, rather than automatically increasing rents as tenant income increases. Another proposal would build on the legislation provided in the 1987 Act to require social security numbers of housing assistance recipients and allow HUD to do income-matching.

Our Subsidized Housing programs also will aid homeless families and individuals. We propose to continue using one-quarter of the proposed 7,000 Section 202 units exclusively for the handicapped. For 1989, we plan to target a large share of those handicapped units for the homeless mentally-ill. In addition, we are asking for an increase in the Supportive Housing Demonstration program from $64 million to $75 million.

I'd like to comment here about our implementation of the Stewart B. McKinney Homeless Assistance Act.

It was just last July that the McKinney Act authorized five new programs in HUD. Within three months, we had issued requirements... and by mid-December, we had awarded to States, cities and non-profit organizations, $154 million of the $180 million appropriated for these programs. The short time period in which we accomplished all of this reflects the priority we placed upon making the funds available as early as possible last winter. Indeed, although the $72.2 million for fiscal 1988 was not appropriated until late December, we announced the availability of these funds within a matter of weeks.

The McKinney Act also established the Interagency Council on the Homeless--an organization consisting of 15 Federal agencies--to help deal with the homeless situation.

I serve as a Chairman of the Council and HUD also provides it with administrative support. I have included the Council's budget estimates in a separate section of HUD's justifications which have been transmitted to you. For fiscal year 1989, the Council is seeking $1.2 million for staff and operations.

We will continue making mortgage credit available to first-time home buyers through our FHA and GNMA programs. We are strongly committed to these programs and especially welcome the permanent authorization of FHA in the Housing Bill. Thanks to our responsible management and streamlining, FHA Mortgage Insurance programs have set records for the number of homes and apartments insured over the past two years. With such innovative approaches as direct endorsement, we're providing faster service to the home buyer and handling a heavier workload with existing staff. Our requested credit limitations are $75 billion for FHA and $100 billion for GNMA, both of which are higher than the need we estimate for fiscal year 1989.

We will also continue support of urban areas largely through the Community Development Block Grant program which will be reduced somewhat to a $2.6 billion program level. This total includes a transfer of $145 million from the Section 312 Rehabilitation Loan Fund, which is proposed for termination. We also request $12 million to continue our Urban Homesteading Program.

The Block Grant program is based on the principle that recipients are responsible for selecting eligible activities most appropriate to their local circumstances. Consistent with this principle, legislation is again proposed to make new construction of housing an eligible activity. Enactment of this proposal will increase local flexibility in the Block Grant program.

We propose $50 million for the Secretary's Discretionary Fund in 1989. This fund supports the community development activities of Indian tribes and insular areas and provides technical assistance which enables State and local governments to make the most effective use of their CDBG funds. Included within the $50 million request is $3 million for the Work Study program which was directly authorized in the Block Grant legislation by the 1987 Housing Act.

Now, Mr. Chairman, I would like to discuss one of my top priorities as Secretary of HUD. This year marks the 20th anniversary of the Federal Fair Housing Law. Yet the goals of Equal Housing Opportunity embodied in that Law remain, for many, a dream instead of a reality. We must never accept discrimination in any form. That is one reason why I have worked to gain the involvement of all levels of government...as well as the private sector...in an effort to develop the broad community support which is required if we are ever to achieve our fair housing goals.

The Budget I propose today will contribute to development of that support, and is designed to enhance a comprehensive fair housing strategy. The Budget includes funding for the Fair Housing Initiatives program, which we sought. With your support...and the support of the other members of this Subcommittee who also serve on the Banking Committee...FHIP, as we call it, became a significant part of the

Housing Act recently signed into law by President Reagan. With FHIP, we will fund private agencies, civil rights organizations, and local fair housing groups to help enforce fair housing laws. This also will help us develop innovative enforcement methods and extend education and outreach efforts. For 1989, we are asking $5 million to fund FHIP, plus $5 million to fund the Fair Housing Assistance program which FHIP complements. This $10 million level more than doubles our 1988 funding for fair housing activities.

The Research and Technology program provides vital support for Housing, Fair Housing and other HUD programs. We propose to increase appropriations from $16.5 million to $19 million for research on such areas as: making housing more affordable; the impact of financing and tax policy on housing; and enforcement of fair housing laws.

The Administration's proposal to initiate a Credit Reform program is intended to reflect the subsidies in Loan Guarantees and Direct Loan programs. Under Credit Reform, HUD appropriations and outlays would increase in 1989 by $2.6 billion. This figure is intended to show the difference between HUD's charges to clients in its Credit programs and the amount those clients would have to pay private firms for similar services. This would not be an add-on to the deficit however, since all payments from HUD would be offset by receipts to the treasury.

Because, as you well know, it is imperative that we practice fiscal restraint, we are proposing no funding for a number of programs, including UDAG, Section 108 Loan Guarantees, Section 312, Housing Counseling, and Congregate Services.

In addition, no funds are requested for the HoDAG and Section 235 Homeownership Assistance programs which, under the agreement reached with the Senate authors of the Housing Act, are scheduled to terminate at the end of fiscal year 1989.

Our Salaries and Expense Account will require $697 million in 1989. Of this total, $338 million would be appropriated and $359 funded by a transfer from the FHA fund. Total HUD staffing in 1989 will decrease to 12,913 staff-years, from the 1988 total of 13,342.

Now I will be happy to respond to any questions the Committee may have on our 1989 Budget proposals.

ANNUAL CONTRIBUTIONS FOR ASSISTED HOUSING

Senator PROXMIRE. Mr. Secretary, you are requesting $6.9 billion for assisted housing in fiscal year 1989. That is a reduction of about $850 million in your current budget, including rental rehabilitation grants. About $3 billion of the total, $3 billion would be used to fund 111,000 vouchers. In your opening statement, you have already extolled the virtues of your voucher program. All of the evidence to date, however, indicates that the program will cost the American taxpayer substantially more than the certificate program, or if we don't want to pay that premium, would house fewer people than could be used under the certificate program for the same amount of money.

Let me explain what I mean. Based on last year's housing voucher demonstration report by Abt Associates, the General Accounting Office has projected that 9,500 fewer families could be served with vouchers under your 1989 budget request than would have benefited from the certificate program. To put it another way, to assist the same number of families with vouchers cost $208 million more than it would to assist these families with certificates.

Doesn't that mean that the voucher program is a bad deal for the American taxpayer?

Secretary PIERCE. No; it certainly does not, sir. As a matter of fact, the study that you referred to was made from initial statistics. The program hasn't been run long enough to get a true reflection of what the amount will be, but from what our research people tell us, they believe that in the end, the amounts of money between these two programs, certificate and voucher, will be relatively negligible, and we do have people here from my Policy Development and Research Section who will be glad to go into detail on this. But from the research figures that you have, I don't think you have the final answer yet.

COMPARISON OF VOUCHERS AND CERTIFICATE COSTS

Senator PROXMIRE. Let me be more specific.

I suppose it can always be argued that we could use more facts in our efforts to compare voucher costs with the certificate costs. For that very reason, the General Accounting Office, at my request, got in touch with 17 public housing agencies across the country. Then GAO analyzed the average rents and subsidies of 87,000 existing certificate tenants to determine the added costs of converting certificates to vouchers.

As you know, converting to vouchers would mean that subsidies for these tenants would be based on a hypothetical, fair market rent rather than actual rents. This study found that as of December 31, 1987, it would cost $83 million more to convert to vouchers. How do you respond to that finding?

Secretary PIERCE. Again, I have to say that I haven't personally seen that study, but I know how people have been looking at it, and we have to disagree, because it is really not a complete study, and it doesn't reflect the facts.

Right now, I would like to have Mr. Demery from Housing or somebody from PD&R come forward.

Senator PROXMIRE. Before you do that, let me just pose one other question. Perhaps he can answer this, too. If the public housing authorities GAO got in touch were representative of all public housing authorities, it would cost about $10 billion more to refund the 800,000 existing certificates with vouchers rather than certificates. Even if these statistics are debateable, as you say there, and I would say your staff would agree with you, isn't it extremely dangerous to move forward full force with a voucher program that might cost the American taxpayer billions more than the existing certificate program without more definitive data?

After all, I have used the GAO as much as any Senator in the 30 years I have been here. I have found them to be extremely accurate. I have never found them yet to have made serious mistakes of the kind that would be made here if they are wrong. So it seems to me that this is quite a challenge. Go ahead, sir.

Mr. BEIRNE. Mr. Chairman, my name is Kenneth Beirne. I am the Assistant Secretary for Policy Development and Research.

The fears that you cited, especially for the first-year study, but I suspect even the GAO figures, reflect, first of all, just the first-year cost of the voucher and certificate programs. We did note about an 8-percent difference between the cost of the programs in the first year.

But most of those costs can be accounted for by peculiarities of the first year of the implementation of both programs together. For example, there were some constraints on the costs of the section 8 program that would not normally exist; there were some adjustments in differences between the ways the voucher program and the certificate program have been run, over time would bring the cost of the two programs together.

Additionally, it should be remembered that any extra cost attributable to the vouchers goes directly to poor people, and it ends up as part of the shopper's incentive for the poor family involved with the voucher program, so that it serves one of the main purposes of the voucher program.

[The information follows:]

RELATIVE COST OF VOUCHERS VERSUS CERTIFICATES

The GAO and the Abt studies you and other Senators referenced should not be used to judge the cost of housing vouchers. The Abt study dealt only with the first year of the demonstration program and the GAO study was flawed.

The GAO study was flawed on two counts. First, it did not provide for the use of exception rents for 20 percent of the units under the Certificate Program and thus understated certificate costs. Exception rents are not authorized for use in the Housing Voucher Program. Second, it assumed that subsidy costs would increase by the same fixed percentage each year, and thus overstated voucher costs. Under the Housing Voucher Program, annual subsidy adjustments are not automatic as in the Certificate Program but are left to the discretion of the PHA.

The Department never claimed that housing vouchers would be less expensive than certificates. We stated that housing vouchers would be less costly than new construction or substantial rehabilitation programs and that housing vouchers and certificates, over the long run, would cost about the same.

Senator PROXMIRE. Thank you, sir. Unfortunately, I am going to have to go to the floor. That is the opening bell, and I am going to ask Senator D'Amato, in my absence, to chair the meeting.

Senator?

Secretary PIERCE. Senator, can we continue with this and put all this on the record for you?

Senator PROXMIRE. Yes; when I come back, we will get right back into it.

Secretary PIERCE. You don't want to continue it now? We have some more on this.

Senator PROXMIRE. I would prefer to wait until I get back.

Secretary PIERCE. All right; we will go into other things and wait until you come back.

NEW YORK PROJECT FOR HANDICAPPED

Senator D'AMATO [presiding]. Mr. Secretary, I would like to pursue the matter of that project for the handicapped located on 126th Street on Lexington Avenue. I understand counsel may have just recently been referred to this matter, and so consequently, I would simply like to have them review the effect of legislation of 1987 as it relates to this with a view toward, and I read a particular section of the Congressional Record which reads:

> . . . Notwithstanding power where affirmed, the Secretary shall apply the provisions of and the amendments made the section to any project that needed to facilitate the development of such a project in a timely manner.

I am not going to make a judgment as to whether or not that gives the authority to move over the 120 percent for fair market rents. We have some counsel that thinks that it very well may. You may be of the opinion that this would not give you the ability to exceed that cap in asking for reprogramming. I am going to ask you to review this with a view toward seeing if we can't work this out or to at least come up with the necessary statutory language, because it is too long to have a project like this be held in this manner for so many years and then, after 4 years, get this kind of an answer. So that is my question to you.

Mr. DORSEY. Senator, we will certainly take another look at it. I had no intention of blocking the project at all. It is simply a legal issue, and I would certainly like to meet with your counsel and any advice that they can provide us, I would certainly appreciate it. If we can't do it, we will provide you with legislation that would enable you to go forward.

Senator D'AMATO. Good; I appreciate that. If you think that there has to be some legislative language that would give you the ability to move forward on this, again, it is the Easter Seal people who are supporting this. This project has been on the books for a long time, and either we should go forward with it or we should not.

But to have it in that state of limbo—and I think the Secretary would join with us in wanting to get a definitive answer or try to get the legislative language that would remedy this so that we can move it forward. I am going to, because my colleagues have joined us, a number of colleagues, give them an opportunity to make an opening statement and ask a quick question before the chairman comes in, because some of them have other meetings to attend.

Senator Nickles?

SECTION 8 RENTS IN TULSA

Senator NICKLES. Thank you very much, Mr. Chairman, and Mr. Secretary, welcome. I wonder if someone on the staff would give the Secretary this for me. Thank you very much.

I am sending you with an article that I would like you to look at, and you don't have time to respond on it. That is the second page of it, I think.

It is an article that, if you looked at the chart on the first part, shows that section 8 in Tulsa, Okla., is paying almost double what most of the comparable private sector rents are. I am not that familiar with the reasons, and maybe this is happening all across the country; maybe it is not, but I guess it is probably happening many places besides just Tulsa, where a lot of the rent programs, section 8 programs, are paying higher than what the mean rents would be. That would concern me. I don't know if that is the case. Is it the case? Is it happening all across the country?

Secretary PIERCE. I have Tom Demery here, who handles that in our Office. He can answer it for you.

Mr. DEMERY. Senator, yes; we are aware of certain discrepancies between the section 8 fair market rent levels and nonsection 8 rents for comparable units around the country. It is not necessarily a pervasive problem in all markets. It is more acute in markets that have experienced periods of extreme financial stress across the board, including real estate prices, which is why the open market rents have fallen so much from where they were. I think if you had done the survey a few years ago, you wouldn't see the gap that is noted right now in the article.

What we are doing and what we do every year is we review what the section 8 fair market rents are for a market, and we make recommendations as to where those levels should be. We are trying to introduce market reality and parity in terms of the section 8 rent levels and market rents.

Senator NICKLES. In this section 8 program, do you sign multiyear contracts? Is that the problem, and is it based on cost instead of on what the market price would be?

Mr. DEMERY. We do sign multiyear contracts. However, there is an ability to make provisions for annual adjustments in those rents.

Senator NICKLES. I just make the note and again, I am looking at one newspaper article. I don't want to draw too much into that, but then again, I don't want to ignore what it is probably telling us, which is that a lot of your section 8's are not paying close to what the market is. Therefore, the taxpayers are paying. Maybe I take the opposite side of what Senator Proxmire was. It looks as though in section 8, in contrast of that to a voucher program and what you might be able to do in

Tulsa or some other places, you could offer individuals vouchers that would move, and, I would think, would automatically be responsive or more responsive to the marketplace, whereas right now, it looks as though, at least in this case, and we do have the scenario which you described; you do have, some people would say, a depressed real estate market, but you have rents that are much more affordable now than what they were a few years ago in many areas. But section 8 is paying the higher bill. That means the taxpayers are paying the higher bill.

Mr. DEMERY. Again, not having read the article and not getting into the specifics behind it, we are aware of that particular problem. If it is a section 8 new construction program that this project relates to or the subject of this article relates to, there might be some programmatic constraints in adjusting those rents to such a level that we can't amortize the debt.

I don't know exactly how the programmatic constraints might apply to this particular situation. But as a general rule, we are looking at this issue and we are trying to address it to protect the interests of the taxpayers and recognize certain changes in markets as they occur.

Secretary PIERCE. But the Senator does make a good point with respect to vouchers. Vouchers are more attuned to the market than the certificate.

VOUCHERS AND MOBILITY

Senator NICKLES. Let me ask you, and I know the chairman wants to talk more about vouchers, but again, I am not as familiar with that program as I would like to be. Mr. Secretary, are individuals able to take that voucher and move it around, sign a contract for a year?

Secretary PIERCE. Well, they can take the voucher and go wherever they want within a certain geographic area.

Senator NICKLES. Is there a specific period of time that that contract would be signed for?

Secretary PIERCE. Yes; they have a certain time.

Senator NICKLES. Minimum?

Secretary PIERCE. One year, I believe; 1 year at a time.

Mr. DEMERY. For a total of 5 years.

Secretary PIERCE. They can go up to 5, but it is 1 year at a time.

REQUEST FOR VOUCHERS

Senator NICKLES. I understand.

Let me ask you, too, Mr. Secretary. I have just glanced at your statement. I apologize I didn't catch your opening remarks, but you are asking for an additional authority to go to 100,000 vouchers; is that accurate?

Secretary PIERCE. Yes.

Senator NICKLES. Is that in lieu of or in exchange, instead of section 8?

Secretary PIERCE. No; this is in addition to. We are asking for 100,000 vouchers.

Senator NICKLES. What is the estimated cost of that?

Secretary PIERCE. I'll have to get my financial person here to tell me that.

Mr. KLIMAN. The voucher estimate is approximately $3 billion for 1989.

Senator NICKLES. That would be for 200,000 vouchers?

Mr. KLIMAN. No; that is for 100,000 vouchers. This is in lieu of certificates, moderate rehab, public housing and the type of activity that was appropriated last year.

NEW CONSTRUCTION VERSUS REHABILITATION

Senator NICKLES. Let me ask you, too, would that help solve some of the problem that I noticed in my state, where we have had some very controversial housing projects for new housing when we have had communities and others that have been very vocal in opposition to that, primarily in the standpoint that they say, "Hey, we have more than surplus housing." Again, a depressed real estate market; ample rental units available. Maybe some would require some rehabilitation, but we have still seen the Department or others come in and say, "Well, we want to build a housing unit." Maybe it would be for 60 apartments or so on. We have heard some vocal opposition, but yet construction would still proceed in spite of that opposition.

I personally have felt like maybe rehabilitation and rental in existing units would be a more economical means than new construction.

Secretary PIERCE. Well, we realize that, too. We have preached that for a number of years.

Senator NICKLES. Does your budget reflect that?

Secretary PIERCE. Well, we try to make it reflect it. We get it twisted different ways.

REQUEST FOR NEW CONSTRUCTION UNITS

Senator NICKLES. I see Congress amending your budget. How many new construction units do you have in your budget?

Secretary PIERCE. We only have the 1,000 Indian and 7,000 202's; That is 8,000.

Senator NICKLES. Thank you very much, Mr. Secretary. I would appreciate a response to this article if and when you could.

Mr. DEMERY. I would be happy to, Senator.

[The information follows:]

SECTION 8 RENTS

The Housing and Community Development Act of 1987 prohibits the reduction of section 8 rents below the most recently approved contract rents unless it is determined that there was an error in rent calculations or that there was fraud.

Previously, section 8 rents were based on the rents of similar unassisted projects in the same market area; but they could never be reduced below the rents in effect at the outset of the section 8 contract.

The initial rents for new construction projects are set at a level higher than for those categorized as existing and moderate rehabilitation projects. The higher rents are permitted to accommodate the higher development and administration costs associated with newly constructed and substantially rehabilitated projects. In addition, for new construction and substantial rehabilitation projects approved after October 23, 1981, we allowed an add-on to the initial rents to account for the unusually high interest rates in effect at that time. This was done pursuant to a financing adjustment of up to 14 percent which permitted additions to local fair market rents, as necessary, to support the feasibility of projects based on these high interest rates. In other words, these rents were based solely on the financing adjustment rather than on local market rents. (The fact that rents are higher due to higher interest rates does not imply higher profits to owners of those developments). It is possible that rents would be reduced if it were found feasible to refinance these projects at lower rates in the future.

Further increases for all new construction and substantial rehabilitation projects will be limited based on the rents of comparable unassisted units in the area. This should result in the higher section 8 rents being stabilized until such time as the rents for the comparable unassisted units have reached an equal level.

Senator NICKLES. Thank you very much.

Senator D'AMATO. Senator Grassley?

Senator GRASSLEY. Thank you, Mr. Chairman.

REGULATIONS FOR UDAG

Mr. Secretary, I think it was the housing authorization bill that had in it a provision to require the publication of regulations for the new UDAG law and the formula therewith. Could you give me just a rough idea of when those regulations will be published?

Secretary PIERCE. They should be—well, we have just about finished them, haven't we?

Mr. DORSEY. Both of the regulations that are necessary to implement the new law have been sent to the Banking Committees for comment. The first one was sent on the 5th. The other one, if it was not up on Friday, will be up today.

Senator GRASSLEY. Then will those be ready for the present round of UDAG?

Mr. DORSEY. Some of the provisions of the act, Senator, became effective with the passage of the act and with the signing of the bill. The 65–35 split, and some of the other provisions have already been put into effect. The other provisions won't be effective until the final rules are published, and that will be several months, so it will not be effective for the May round.

SERVING MORE PEOPLE WITH LESS MONEY

Senator GRASSLEY. Mr. Secretary, you are the last member of the President's original Cabinet. You have served this administration since day one. More than any other member, you probably done what you could to carry forth the Reagan agenda and to move it. No other agency has cut its budget by more than half, as well as a lesser number of staff.

Yet you indicate that at the same time you are serving more low-income people than we did when you first took office. I would like to have you explain how you are able to make this claim.

Secretary PIERCE. Well, we are able to do it because what we have done is more with less. You will recall when I took office there was a program called section 8 new construction, and that was a backbone program of the Department at the time, a very expensive, and, in my opinion, uneconomic program. We got rid of that program, and we found that by using vouchers and certificates we could house about three times as many people for the cost of housing them under the new construction program.

That is one thing. Then we made certain other programmatic changes. You will recall at that time, interest rates were very high, and there were a number of projects in the pipeline. Because of the high interest rates, builders were not interested in getting these projects or units out of the pipeline. Therefore, we developed FAF, a fiancial adjustment factor program to encourage the construction of these units by helping builders pay the very expensive interest rates.

In other words, the interest costs were too high for them, so we would help pay that interest. We did that, and that helped get some of the projects out. In addition, by making certain other programmatic changes such as greater emphasis on rehabilitation and less emphasis on new construction, and finally by being more efficient, we administratively were able to do more with less.

When we got here, we had 3.2 million assisted housing units. Today, we have about 4.3 million. So over 1 million more families are being taken care of today than when we took office.

Senator GRASSLEY. Then from your perspective, can you say, or at least do you feel, that those who are truly in need are being taken care of at this time, either from the perspective of that need as it is generally measured by our program need factors, or in relationship to what was being served when you came to office?

Secretary PIERCE. Well, certainly compared to those who were being served when I came to office; many more are being helped today than were being helped at that time. There is no doubt about that. We are doing a better job today of taking care of people than we were doing then, by over 1 million families, and that is what a lot people can't seem to understand. They keep saying, "You are not doing that." But we are. That is very clear from the record. We are taking care of more people today by far with much less money than were being taken care of when I took office.

Senator GRASSLEY. Thank you, Mr. Secretary.

Mr. Chairman, I am done.

RENT ADJUSTMENTS FOR VOUCHERS

Senator D'AMATO. Before going on to Senator DeConcini, Mr. Secretary, let me make an observation which Chairman Proxmire and the staff has been pointing out and which I think a number of our colleagues have touched on. That is the question of the fair market rent adjustment as it relates to the voucher program. If, indeed, as it has taken place in certain areas, for example, Houston, the Southwest where we have had some depressed real estate values, what takes place is that a windfall inures to the benefit of the renter.

In the particular case here at hand, there is an apartment complex where the rents are in the area of $260 a month and the housing certificate under the voucher program where the rent under the voucher program gets $400 a month and is able to rent a complex where there are swimming pools available, et cetera, et cetera, two-bedrooms, three swimming pools in this complex. What it does do is get some of the local people quite annoyed at this kind of situation.

It would seem to this Senator that we have got to attempt to do a better job in adjusting that fair market rent, not only in high-cost areas, but also as it relates to some of these low-cost areas. I think that touches on one of the questions that Senator Nickles was touching on. In fact, the voucher program will always cost somewhat more money, because you guarantee up to the fair market rent. So while counsel may shake his head no or, if, indeed, you guarantee up to the fair market rent, you have always, at every time, have got to pay at least that amount of money. Whereas if you have a certificate program, you will find that some people will not be doing it.

But the windfall problem and the adjustment to find out what that fair market rent is will adjust that windfall problem, and it is a problem, I think, that more and more people will become cognizant of. I think we ought to try to do something to address that. If Mr. Demery wants to address that?

Secretary PIERCE. Yes; I think Mr. Demery wants to comment on that.

Mr. DEMERY. I think, Senator, the point you raise that the FMR's under the certificate program are inflationary is exactly right on point. And the voucher program tries to do something about it. I believe you raised Houston as your example. In that particular case, the payment standard under the voucher program is approximately $30 to $35 under what the FMR is under the certificate program.

As I said earlier in my response to Senator Nickles, we are currently undergoing a thorough evaluation of the FMRs in those soft markets with the eye toward turning them back to more closely reflect market realities.

Senator D'AMATO. So you are undergoing a review to see?

Mr. DEMERY. Yes, we are. This ability to set the payment standard is one of the real long-term benefits of the voucher program. A certain amount of money is allocated to the PHA for a 5-year period of time, so they are more judicious in their use of setting the payment standard, as opposed to an automatic adjustment under the section 8 certificate program. In the long term—and GAO undoubtedly will bear this out in their future studies—the gap between vouchers and certificates will narrow and, in fact, merge.

Senator D'Amato. Thank you.

Senator Proxmire. Senator Domenici, I understand, is next.

Senator Domenici. Thank you very much, Mr. Chairman. I want to remind my friend, Senator D'Amato, that he called me Senator DeConcini awhile ago.

Senator D'Amato. I have trouble, Senator, with those Italian names. [Laughter.]

Excuse me.

Senator Domenici. I think you have your omnibus drug bill on your mind. [Laughter.]

OMNIBUS HOUSING BILL

Senator D'Amato. I have the omnibus housing bill, because were it not for Senator Domenici, we would not have had a housing bill, and I say this to the Secretary. He made possible, Pete Domenici, the first housing bill that we have had in 7 years as a result of his tenacity in working out, working with the administration and working with you, Mr. Secretary, as you well know, the difficulties and the objections that stood in the way, and America and its housing needs, I think, are much better served, I know are much better served as a result of his tenacity and stepping in literally the 11½ hour. So we are all deeply indebted to the Senator, and as it relates to the omnibus drug bill, were it not for him steering us through the mine fields every inch of the way, we would not have had the budget that I believe will allocate sufficient resources or give us the opportunity to allocate those resources to really take on that drug war.

So Senator Domenici, notwithstanding that it was Senator Deconcini any whose work as it relates to the legislative language, you not only participated in that, but without your work on a bipartisan basis, we would not, I think, be in the position to undertake that challenge as I know that the Congress will in the days and weeks ahead.

Senator Domenici. Chairman Proxmire, you know that I came here because we had that all planned. [Laughter.]

ASSISTANCE FOR HOMELESS MENTALLY ILL

I have just two quick questions for the Secretary, and I thank you for your indulgence, Mr. Chairman.

First, Mr. Secretary, I am very concerned about one aspect of the Stewart B. McKinney Homeless Assistance Act that we passed almost a year ago. I don't expect you to have an answer this morning, but since we are going to reauthorize these programs, I really think it is imperative that we get some information. Let me describe the situation as I see it.

Even though that bill was extremely cumbersome and not precisely what everyone wanted as we put it together, we tried to make every possible assurance that housing and services for the homeless mentally ill would be, and could be, coordinated. You might not recall, but we were not able to put the services and the housing in the same agency, so HUD has the housing programs, and the National Institute of

Mental Health provides services for individuals who are homeless and mentally ill.

But we thought, with the enormous need for transitional housing for the mentally ill homeless, that the applications for that housing component would truly be in great demand. Now, Mr. Secretary, I find that of all the applications for housing, the most difficult category for which to find applicants seems to be this category; that is, the homeless who are mentally ill.

I would like to know the reason, and clearly, I am one who believes an analysis by your Department would be relevant. Some may not even want to listen; they may want to go their own way and say it doesn't matter. I would like to know Why there is a lack of interest in the homeless mentally ill transitional housing component of this initiative. Is it attributable to the complexity of the requirements that we put on HUD or that you have built into the system that accounts for a tremendous lack of locally approved transitional housing grant applications for sites?

We thought we made the program very flexible. Is it that HUD is suggesting that there is not a need for this program? As we prepare for the second round of authorization, I would very much like an analysis by your Department. If you can give it to us here today, fine, but I would like a thorough analysis. I find it ironic that after we worked so hard to make the housing component for the mentally ill street people as streamlined as possible, that it is the least used of that series of grants for the homeless.

If you have some observations now, I would like them; if you would rather give us a detailed, analysis for the record, that is fine. From my standpoint, I only want answers so we can use the information constructively as we put the bill together.

DHUD'S AWARENESS OF MENTALLY ILL

Secretary PIERCE. I would like to say a few things, and I would like to have Mr. Demery, who is working on transitional housing, make some comments, too. But we are trying to meet that situation right here in our own budget. We make provision for a certain amount of housing to be set aside for the mentally incompetent or homeless, and we are doing it to the very best we can with the knowledge that we have.

I want to make it very clear. Unfortunately, there is not enough specific knowledge about the homeless in this country. We hope to have more very, very shortly.

We, through the McKinney Act, are now getting together all of the efforts that are being made by the federal government and by having people go out into the various parts of the country; we are getting information from cities and states throughout the country, and when we put all this together, we will have a much better picture than has ever been given before.

But we are watching the situation and we are trying to meet that need, because we do know there is a great need for the homeless who are mentally ill. They make up a sizable portion of the homeless that exist today.

But Tom, why don't you continue?

Mr. DEMERY. Yes.

Senator Domenici, it is true that we are able to fund only 34 projects for the mentally ill homeless as a result of our October 30, 1987, competition.

We had available $30 million for this component of the transitional housing and we only used $19.2 million. Now, to be sure, there were a number of reasons; there was no one reason for this difficulty. In analyzing where we are and why only $19.2 million was used, we came up with a number of answers which I would like to share with you.

The timeframe that we had to get this program off the ground once it was funded and authorized was extremely tight. That did play a fact in the low response and participation in that particular program.

As you correctly note, this is the most difficult population to serve. In surveying local communities after the competition had ended in an effort to determine why there was such low participation, we found a number of things: One was that it was very difficult for applicants to find acceptable sites. There was this whole concern about, "Not in my back yard." Everyone is concerned about the problem, but "Not in my neighborhood."

Because having a site was a requirement of the competition, and there was so little time to overcome many of those objections, that played a factor in the participation or lack thereof. Second, applicants for these funds typically have experience in the mental health field but not a lot of relevant experience with housing and housing rehabilitation. As a result, many of the applicants weren't able to prepare an approvable application.

We have added the funds not expended in that round, the $10.8 million, to the $20 million component for 1988, making it a total of $30.8 million. The applications for this money are duc May 17, 1988. As a result of all that we have learned from the October round, we have been encouraging public housing agencies and community development agencies to serve as coapplicants with private, nonprofit organizations. We hope this will develop stronger applications.

In addition, my staff has certainly got a lot more experience today than they did a few short months ago. So we are able to better counsel and assist applicants in putting together meaningful applications so that the monies will, in fact, be awarded. So it is a learning experience for both of us, and I think we have identified the most significant problems. I think we have taken the necessary steps to improve and overcome those situations so that during this May 17 round there will be more projects and applications funded. We will, however, do an analysis on May 18 to see how successful we were in that regard.

NUMBER OF HOMELESS HOUSED

Senator DOMENICI. My last question has to do with general funding of homeless housing projects. My staff tells me that HUD has indicated that 129 projects were awarded funding under this program through December 1987.

I think you must know that the American people are extremely concerned about the homelessness issue. I don't think it suffices to say it is complex. For those of us who are working on it, we know it is very complex. We know there are no simple answers. We know a lot more today than we did 2 years ago, but I think, as we spend money, we ought to get a little bit of information. I personally would like to know in these 129 projects that were awarded funding, how many homeless individuals have been housed or how many do we plan to house? How many applications did you receive in the latest round of applications in March? How many of these applications do you anticipate funding?

Then I have one wrapup question, but do you have answers to those?

Secretary PIERCE. We will get that information for you and supply it for the record, sir.

Senator DOMENICI. Will you, please? Frankly, I don't think you ought to be reluctant to tell us if this is a slow program just by its very nature. We ought to be honest as to how many it housed. Because we keep spending money, and we would like to know what kind of impact the program is having.

[The information follows:]

SUPPORTIVE HOUSING—HOMELESS HOUSING

We anticipate that the 129 projects currently funded will be fully operational by late fall. When fully occupied, these projects are expected to serve an estimated 1,855 individuals and 825 families.

These projects are being funded under the transitional housing component of the supportive housing demonstration. This component is designed to prepare individuals and families for permanent housing by providing services such as medical and psychological counseling, nutritional counseling, employment counseling, assistance in obtaining permanent housing, and assistance in obtaining other federal, state, and local assistance which may be available.

In March 1988, the Department received a total of 57 applications which will be competing for $30 million available under the permanent housing component of the program. These applications are currently under review and selections are expected to be made shortly.

Secretary PIERCE. We want to be honest with you. We will just get the exact figures. We don't have them in our heads, but we will get them for you, and we will get the information for you, everything that you have asked for. There is no question about it.

DISTRIBUTION OF FUNDS FOR HOMELESS ASSISTANCE

Senator DOMENICI. Even without a new law, if the budget resolution is followed by this committee, there is $200 million in new budget authority assumed for the two major homeless assistance programs that you operate—the emergency shelter grant and the supportive housing programs. I think it would be interesting to have your views, because at least for this Senator, as a subcommittee member, I would like to know what you recommend.

I would like to know how you would recommend distributing the $200 million between these two programs, the homeless supportive housing program and the emergency food and shelter grant program. If we are going to divy it up, I think we ought to have some information as to how you see the effectiveness of the two or we are apt to put money in the wrong place. If you could get us that, I think, unless the chairman objects, it would be helpful information.

Senator PROXMIRE. Yes, indeed.

Secretary PIERCE. Let me just talk to my financial person here before we answer.

Senator DOMENICI. Please.

Secretary PIERCE. We will supply that for the record, also, sir.

[The information follows:]

ADDITIONAL FUNDING FOR HOMELESS PROGRAMS

Based on types of homeless assistance sought by state and local governments and nonprofit organizations, and also based on information provided to HUD from service providers, the Department could, hypothetically, divide additional appropriations to our existing homeless programs as follows: $75 million for the supportive housing demonstration, $75 million for emergency shelter grants, and $50 million for rehabilitation of SRO units. If the funds were to be distributed only between supportive housing and emergency shelter grants, the amounts would be $125 million and $75 million, respectively.

However, given the severe budget parameters due to the deficit burden, we are requesting 1989 funding for the supportive housing demonstration ($75 million) and not the other activities authorized by the McKinney Act. We are also focusing our 1989 request on $50 million for housing for homeless chronically mentally ill individuals. Emergency shelter activities will continue to be a CDBG-eligible effort for communities under the CDBG program.

Senator DOMENICI. I do note that if you follow your budget priorities, you probably will recommend supportive housing for most of the resources.

Secretary PIERCE. Yes; there's no doubt about it.

Senator DOMENICI. You have zeroed out the emergency food and shelter grant program, as I understand it.

Secretary PIERCE. It is not a matter of zeroing out. It is a matter of considering what the other parts of the government are doing, what other federal agencies and departments are doing. When you put it all together, we feel there is enough for emergency shelter from other parts of the government. That is what it comes down to.

Senator DOMENICI. In my statement—I am not being critical. You had less resources than the $200 million. We may spend more than your budget request. So you might, if you had $200 million, put some funding in emergency shelter grants. You didn't have that much in your budget, so you put it in supportive housing.

Secretary PIERCE. Yes.

Senator DOMENICI. I think we ought to know, if we go as high as $200 million, what you would do and why.

Secretary PIERCE. All right. I think we ought to give you that information.

SECTION 202 SET-ASIDE FOR HANDICAPPED

Senator DOMENICI. Mr. Chairman, I just want to suggest one other thing. There is a little known part of this new 1987 Housing Act, Mr. Secretary, that I think is exciting. Twenty-five percent of the section 202 units are supposed to be used for handicapped individuals, including the mentally ill homeless.

Secretary PIERCE. Yes.

Senator DOMENICI. I think it is important that your Department be of help to local communities in making this work, and so I would like to know what HUD has done as a federal department to help local communities and their non-profit organizations understand this 25-percent set-aside. It is a new and, in my opinion, a very exciting program. If we are going to have a 202 program, we ought to use it for this purpose.

Are you involved in an educational process?

Secretary PIERCE. Yes; we are in an educational process, I understand, and we haven't worked out everything we will do, but we are in the process of trying to educate the public on this.

Senator DOMENICI. I would like very much to know how many applications are pending for that kind of housing, if you would, for the record.

Secretary PIERCE. Wait a second. We don't have any applications yet, I am told, because a NOFA is just going out now.

Senator DOMENICI. What is going out?

Secretary PIERCE. The NOFA, the notification.

Senator DOMENICI. OK. Fine.

Senator PROXMIRE. Senator Domenici, before you go, I want to congratulate you on your line of questioning, particularly your emphasis housing for the mentally ill homeless. I think this is critical. As you said, last year, we did put in—there is some criticism of it—we did put in 25 percent, which was an increase from 15 to 25 percent for earmarking.

Senator DOMENICI. Yes, sir.

Senator PROXMIRE. For the mentally ill handicapped. There was some objection to this on the part of those who felt we were taking it away from the elderly, and that we shouldn't have that big an earmarking. I think it was in exactly the right direction, and I am happy to hear that this is working, and I am glad that you followed up in the questioning on it.

ADMINISTRATIVE FEES

Now, Mr. Secretary, the General Accounting Office has just completed an analysis of rental certificate program administrative fees at my request. GAO looked at the fees HUD paid 70 public housing authorities of various sizes and identified enough surplus of $22 million over a 3-year period. GAO found that local authorities were using surplus funds for many different purposes including subsidizing other housing units, purchasing office space and equipment, paying for office parties and purchasing exercise equipment for public housing authority employees.

In July 1987, your Inspector General—I guess I am allergic to those office parties. [Laughter.]

In July 1987, your Inspector General reported that HUD policy regarding the use of surplus funds using the vague, and they recommended that you issue specific guidelines to find a way in surplus funds could be used. I understand you decided not to follow that recommendation. Can you tell us why?

Secretary PIERCE. I would like to turn this over to Mr. Demery, because basically, he is the one who looked into it, and we followed his recommendation, basically.

Senator PROXMIRE. Mr. Demery? [Laughter.]

You are on the spot.

Mr. DEMERY. Yes; you are right. I sure am.

In preparing for the hearings today, we covered a range of subjects as it related to vouchers and certificates. This issue of PHA fees and how the surplus monies were used and what is an appropriate or inappropriate use was discussed. Obviously, we don't condone the kinds of inappropriate expenditures that you mention, and you even left a few off your list that received some notoriety not too long ago.

What we have done is to take a rather aggressive stand in monitoring and educating the PHA's as to what is and is not acceptable. The specifics, Senator Proxmire, as to what was said to whom when, I can't recall for you right now. But we have not been insensitive to the Inspector General's report or the fact that the surplus of fees has been not used in the manner for which they were intended.

We have issued instructions to our field offices to do audits, for example; to monitor this activity very closely. I think that we have also——

GUIDELINES ON USE OF SURPLUS FEES

Senator PROXMIRE. Let me just interrupt to say what we asked for, you specifically define guidelines on how the surplus funds could be used. You didn't do it. You indicated that that wasn't what you wanted to do. You can talk in general about education and so forth, but unless you have a specific directive as to how they can use the funds, it seems to me you can expect that they will be diverted in ways they shouldn't be.

Mr. DEMERY. Senator, I just am going to have to get back to you on that answer. I just don't know the answer for you right at this minute.

Senator PROXMIRE. Get back as soon as you can for the record.

Mr. DEMERY. I will, sir.

[The information follows:]

USE OF PHA FEES

When the administrative fees earned exceed PHA expenditures for program administration during the fiscal year, that amount is credited to the operating reserve. That operating reserve is used first to pay costs of ongoing administration and, second, to ensure that administrative costs to be incurred through the remaining ACC term will be covered. Only if these conditions are met, and the PHA is properly administering the program, may the PHA use any remaining excess for other housing purposes consistent with states or local law.

In response to the concerns raised by our Office of the Inspector General, we are revising our procedures for PHA use of the operating reserve. Prior to withdrawing funds from the operating reserve account, PHA's must notify the HUD field office of the proposed date, the amount of the withdrawal, and the purpose or use. The field office will make a determination concerning whether the PHA is administering the program adequately. If that determination is negative, the PHA will be advised that a withdrawal from the operating reserve account "for other purposes" is not approved and that the operating reserve must be used to improve administration of the program.

The discretion accorded PHA's in the use of excess administrative fees was designed to provide an incentive for efficient program administration and is consistent with the policy stated in the U.S. Housing Act of 1937 to give PHA's maximum responsibility in program administration. Given this discretion, accountability, and oversight for use of the operating reserve for other housing purposes rest largely at the state and local level—principally with the PHA Board of Commissioners or other oversight authority.

To assure this accountability, we will institute a requirement that PHA boards of commissioners set an appropriate threshold for amounts of expenditures which can be withdrawn from the operating reserve account for other housing purposes without board approval. For amounts in excess of the threshold, the PHA board will be required to make an affirmative determination that the expenditure is appropriate and is for housing purposes consistent with state and local law.

The notice transmitting these procedural requirements to PHA's will also stress the need for PHA's to be prudent in their use of excess administrative fees.

ABT STUDY AND MODERNIZATION FUNDING

Senator PROXMIRE. Mr. Secretary, you are requesting $1 billion for public housing modernization in fiscal year 1989, a reduction of $728 million below last year's appropriation. These funds are used to keep existing low-income units in the national housing stock, which is a far cheaper way of providing housing and building new units. Last year at this time, we had just received a draft report from Abt Associates to tailor your cost of modernizing existing public housing stock.

At an April 1, 1987 hearing, Dr. June Koch, your former Assistant Secretary for Policy Development and Research, said that she thought that within a month, 2 months at the outside, HUD would send the report to the Office of Management and Budget, and she hoped it would go quickly from the Hill to OMB.

However, we didn't receive the report until April 7 of this year. That makes it about 9 months late. Why did it take HUD over a year, after the draft report was received, to deliver the final product?

Secretary PIERCE. I will say this, sir: There was a great deal of discussion about that report within our own office and between OMB and ourselves. There was a great deal of disagreement, and it took us a long time to reach a point where we could say that we were in accord. I think this is probably the reason it took so long.

CHANGES IN ESTIMATES PROVIDED BY ABT

Senator PROXMIRE. When that modernization was distributed on April 7, it was accompanied by a 13-page pamphlet entitled, and I quote, "HUD Perspective on Public Housing Modernization." That pamphlet reached the conclusion that based on the Abt data, the backlog of mandatory modernization needs of public housing projects is from $7.5 billion to $9.2 billion.

A Washington Post article on the Abt characterized the HUD pamphlet as saying it would cost less than one-half the amount estimated in the report to meet the public housing modernization backlog. Since the Department is on record as expecting the information in the report to serve an important role in the deliberations by the Congress and the administration on the public housing modernization issue, why did you find it necessary to undercut in such a casual way a study that took 3 years and $4.5 million to complete.

Secretary PIERCE. No; it wasn't a casual undercutting, sir. That is part of the differences people have with it. We spent a great deal of time within the Department and also with people in OMB, and we finally got to the point where we agreed on what those figures should be, and they were sizeably under the amount that the Abt study had forecast. I have people here who can explain to you exactly what the bases for the differences are.

Senator PROXMIRE. As I understand it, the Abt study said it would cost $20 billion.

Secretary PIERCE. More than that, I believe.

Senator PROXMIRE. You estimate, or your agency estimates, between $7.5 and $9.2 billion.

Secretary PIERCE. It was more than $20 billion, wasn't it in the Abt study?

Mr. BEIRNE. In the Abt initial report, it was $26 billion.

Senator PROXMIRE. Twenty-six billion dollars?

Mr. BEIRNE. Right.

Senator PROXMIRE. It was about one-third, roughly. I understand the final Abt report might have been less than that.

Mr. BEIRNE. In the final Abt report, it might have been less than that. After we worked out the figures a little bit more, it came out to about $24 billion, but that included a lot—part of the problem is that the Abt study as it was constructed included a lot of different things, only a sizable part of which was the concern for what would be the cost to bring public housing up to a basic standard.

In addition to that, there were other categories which involved improvements ranging everywhere from improvements that should be considered mandatory and which were eligible for modernization help to many improvements which were not.

When you start with the figure that Abt provided and start working down and exclude some of the additional improvements which would not be eligible, some of the additional improvements which the inspectors for Abt decided were not a justified series of improvements, the costs of redesign of projects, accounting for the amount of money that was already in the modernization pipeline and so on, what you will end up with is an upper figure of approximately $9.2 billion for bringing the public housing stock up to the basic standards for acceptable housing.

CHANGES IN MODERNIZATION ESTIMATES

Senator PROXMIRE. The figure that was reported in the Washington Post article on April 12 of this year, and I quote now directly from the article, "The proposed spending of more than $21.5 billion"—and this refers to the Abt estimate—"is clearly beyond the capacity of government to fund at in any reasonable period of time according to HUD."

Last year, we had a discussion of the draft Abt modernization report. At that time we made it clear you disagreed with the $21 billion cost figure contained in the report which said, and I quote, "If you get down to pure modernization, it should be $10.7 billion."

Can you tell us what happened over the last 12 months to shrink your estimate from $10.7 billion to from $7.5 to $9.2 billion? That is a reduction of $1.5 billion minimum.

Mr. BEIRNE. Yes; I'm not exactly sure what all the elements were. That $10 billion figure would not have taken into account, for example, funds that were already in the pipeline when the estimate was made. There were also some other adjustments that were just a question of administrative or technical adjustments to the $10.7 billion figure.

Senator PROXMIRE. Let me ask you why you deleted certain categories of expense listed in the Abt study of modernization cost. First you deleted $5.5 billion attributable to a project-specific ADDS. ADDS, I understand it, are defined in the report as equipment or features that do not presently exist at a particular development but are identified by public housing authorities for code compliance, project integrity, long-term viability or efficient operations.

Don't you think we should be concerned about code violations and long-term project viability, and if you do, Why do you delete $5.5 billion?

Mr. BEIRNE. Well, there were really five different categories that we used in defining the ADDS in the course of the Abt study. What happened was that the two most necessary categories of the ADDS included ADDS that were either mandatory in some sense to bring the public housing up to safe and sanitary conditions or were otherwise eligible for modernization expenditures.

There were basically three categories, although there was a little overlap in the third category, but there were basically three categories which involved either differences of opinion between the public housing authority and the inspectors as to whether or not the cost was actually needed, and also, there were improvements that would not normally be eligible for federal modernization support. Even though they would, in fact, involve improvements to the public housing, the modernization limitations would normally prevent the public housing authority from using those.

Now, they split out in different ways. The additions and improvements that were not validated by the inspectors was about $5.2 billion. The additions and improvements that were validated by the inspectors but were not appropriate for federal funding came out to about $5.7 billion out of the $26 billion.

DELETION OF ENERGY CONSERVATION COSTS

Senator PROXMIRE. Why did you delete $1.1 billion attributable to energy conservation ADDS. Wouldn't these charges save more than they would cost by reducing the need for public housing operating subsidy funding?

Mr. BEIRNE. We basically cut them out on the assumption that that is really a separate policy decision since most of the energy conservation costs could usefully be dealt with on a pay-as-you-go basis; that is, the hope would be that you would, if you funded energy conservation, it might pay for itself over time, but that was not, strictly speaking simply a modernization cost.

So it was a separate policy decision as to what extent you would go after those, and so we separated them out from the modernization study itself.

Senator PROXMIRE. But it seems to me if they would save more than they would cost by reducing the need for housing operating subsidy funds, that it would make sense from the standpoint of the federal government, from the standpoint of saving money, as well as from the standpoint of the tenants, to include them.

Mr. BEIRNE. That might well be. In fact, in PD&R, we have done a certain amount of work on energy conservation, but given the regulatory situation right now in terms of modernization and so on and in terms of public housing rules, some of the things that you might want to do you would have to go beyond the current practices in order to do.

As I said, that is a separate policy decision, and it might be worth considering, but it is not part of the modernization study.

DELETION OF ESTIMATES FOR REDESIGN

Senator PROXMIRE. You also deleted $1 billion for redesign items. These are defined in the Abt study as including, and I quote now, "Substantial structural in order to ensure continued viability at a particular development."

That would include reconfiguration of buildings or dwelling units to make some more suitable for their current use, and special inspections for developments selected as redesign candidates were performed by senior architects with public housing authority input at each stage of the process. Why don't you think these are valid modernization costs?

Mr. BEIRNE. Again, they are a separate policy issue. The units involved in the redesign are not necessarily units that would be unsafe or unsanitary, around we tried to limit the modernization estimate to those units which were not currently safe or sanitary.

What the redesign would do in many cases is enable the public housing authority either to make the housing more viable and attractive in a particular locality, either because of changes in the surrounding areas or because of changes in the public housing authority's population, for example, if they wanted to make relatively empty elderly project into a multifamily project, into a large family project. Those things are separate decisions, actually, from what we would consider modernization decisions, and so they were set out as a separate category.

Senator PROXMIRE. As you indicate in your pamphlet, setting forth HUD's perspective on public housing modernization costs, your cost estimate of $7.5 to $9.2 billion is in 1986 dollars. How much would your estimate growth if it was translated into current year dollars, not simply into 1988 dollars, but into the dollars that would have to be spent at the time when this work would be done, which would be 1988, 1989, 1990, so forth.

Have you made any estimates of that?

Mr. BEIRNE. No, we haven't, as yet. We could work them up fairly rapidly though.

Senator PROXMIRE. Would you do that for the record?

Mr. BEIRNE. Sure.

[The information follows:]

Summary of HUD's Estimates of Modernization Costs Adjusted into Current Year Dollars 1/ (in Millions)

Type of Modernization	1986	1987	1988	1989	1990
Public Housing Fix	$9,307	$9,475	$9,749	$10,061	$10,413
Indian Rental Fix	$161	$164	$169	$174	$180
Indian Homeowner Fix	$89	$91	$93	$96	$100
Mandatory Adds	$881	$897	$923	$952	$986
Indian Rental Adds	$49	$50	$51	$53	$55
Handicapped Retrofit	$232	$236	$243	$251	$260
Handicapped Adds	$27	$27	$28	$29	$30
Lead Paint Abatement	$446	$454	$467	$482	$499
Mandatory "Other Adds"	$42	$43	$44	$45	$47
Turnkey 3 and Sec. 23	$230	$234	$241	$249	$257
Admin. Cost @9.8%	$1,122	$1,142	$1,175	$1,213	$1,255
Deduct Pipeline Funds	($1,509)	($1,536)	($1,581)	($1,631)	($1,688)
Deduct 73,500 high-cost/problem units	($1,862)	($1,896)	($1,950)	($2,013)	($2,083)
TOTAL (No MORE than)	$9,215	$9,381	$9,653	$9,962	$10,310
Deduct up to 95,300 units triggering a viability test	($1,759)	($1,791)	($1,843)	($1,902)	($1,968)
TOTAL (No LESS than)	$7,456	$7,590	$7,810	$8,060	$8,342
Boeckh Cost Index 2/		1.018	1.029	1.032	1.035

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1. Based upon "HUD Perspective on Public Housing Modernization" U.S. Department of Housing and Urban Development, March 1988, Appendix page 1. The figures reported are from the HUD Revised column. See the notes on Appendix page 1 and 2 of the "HUD Perspective on Public Housing Modernization" for a detailed description of the content of each category.

2. Boeckh Construction Cost Index for Residences. Indexes for 1988-90 are estimates and are subject to change. The index for 1987 is the actual index officially accepted.

PUBLIC HOUSING OPERATING SUBSIDIES

Senator PROXMIRE. Mr. Secretary, you are requesting $1.5 billion in fiscal year 1989 for public housing operating subsidies, an increase of $67.5 million over your current budget.

According to page S-4 of your justifications, you anticipate a savings of $40 million through improved tenant income recertification verification activities. Can you tell us how you decided that $40 million was the right figure instead of $20 million or $80 million or some other amount?

Secretary PIERCE. Let me see. That estimate was made by Public Housing.

Mr. Baugh, who is the General Deputy Assistant Secretary for Public and Indian Housing, is responsible for the estimate and will tell you how they arrived at it.

Mr. BAUGH. Mr. Chairman, the $40 million is an estimate made during our discussions with OMB. It is an estimate based on how many people it is thought are not reporting their incomes correctly.

Senator PROXMIRE. Was that based on a sample? How did you arrive at the $40 million?

Mr. BAUGH. I will have to supply that for the record, Mr. Chairman.

Senator PROXMIRE. Will you do that and give us as much detail as you can on that?

Mr. BAUGH. Certainly.

[The information follows:]

ANTICIPATED SAVINGS RESULTING FROM IMPROVED TENANT INCOME RECERTIFICATION/VERIFICATION

The budget estimate of $40 million of savings resulting from improved tenant income verification and reporting assuming a 2-percent increase in dwelling rental income based primarily on increased income matching activities by the Department's Office of Inspector General [OIG]. The estimated amount of the increase was derived from results of a survey of income verification conducted by the Department's Office of Policy Development and Research in 1980 and results of pilot matching programs conducted by the OIG at individual public housing agencies. Achievement of these estimated savings assumed enactment of legislation which would give HUD full access to state wage data and the ability to reimburse state governments for their participation in the matching activities.

INSURANCE COSTS

Senator PROXMIRE. In fiscal year 1987, HUD distributed $114 million to local public housing authorities to cover a shortfall in insurance costs. Although the table on page S-4 of your justifications indicates that $65 million will be available for such insurance costs in 1988, the Department allocated an additional $10 million for such costs as a 1987 advance. Even with these added funds, public housing authorities tell us there is a shortfall of $40 million.

You are proposing to cut funding for excess insurance costs to $30 million in 1989. Why do your calculations of need diverge so sharply with what we are hearing from the public housing lobby?

Mr. BAUGH. At the time the $30 million estimate was submitted, we felt that the insurance market would soften somewhat by 1989 and that the price of the coverages would improve.

In addition, we felt that the PHA self-insurance pools that have been started in a number of states would have a greater effect on prices.

Senator PROXMIRE. Isn't that tremendously optimistic? Maybe my figures aren't right, but it seems to me you are going down from $114, is that right, to $30 million?

Mr. BAUGH. The $30 million is in addition to the $50.4 million already in the PFS base for insurance in 1989.

Senator PROXMIRE. But I understand $114 million was in the base, too; in excess of the base, I should say.

Mr. BAUGH. $114 million was provided based on extra insurance costs in 1987 and an additional $10 million was provided to PHA's out of excess 1987 funds.

Senator PROXMIRE. $114 million.

Let me start over again. I said in fiscal year 1987, HUD distributed $114 million to local public housing authorities to cover a shortfall in insurance costs.

Mr. BAUGH. That is right.

Senator PROXMIRE. Although the table on page S–4 of your justification indicates that $65 million will be available for such insurance costs in 1988, the Department allocated an additional $10 million for such costs as a 1987 advance. Even with these added funds, public housing authorities tell us there is a shortfall of $40 million. That is $10 million plus $65 million minus from $114 million. That was the reason I arrived at the $40 million.

Mr. BAUGH. Once again, Mr. Chairman, our assumptions are based on an increase in participation in the self-insurance pools. With some of the interest groups such as the Council of Large Public Housing Authorities also coming up with an insurance program, we thought that the amount of money included in our budget for insurance would be sufficient.

Senator PROXMIRE. It is just still strikes me that to go from $114 to $30 million is superoptimistic, even for the Reagan administration.

Mr. BAUGH. Well, keep in mind there is another $65 million carried over from 1987 to 1988. That is in addition to the $48.2 million that is in the PFS base for 1988.

Senator PROXMIRE. Thank you very much, sir. I appreciate that.

Is Mr. Baugh here? You are Mr. Baugh?

LEAD-BASED PAINT

I beg your pardon. I didn't get the name right. All right, sir.

Mr. Baugh, this question refers to lead-based paint. On March 7, you signed off on an outline of suggested regulatory changes for implementation of section 566 of the Housing and Community Development Act of 1987 which establishes procedures for the prevention of lead-based paint poisoning.

In that document, you say you will require the testing of all interior and exterior painted surfaces using an x-ray florescent analyzer. However, in the same document, you say that the products currently available for testing surfaces often are received in nonworking condition and must be returned to the manufacturers.

The document goes on to say that even following servicing by the manufacturers, the machines provide erratic and unreliable results. In view of these statements, why are you mandating use of the admittedly unreliable x-ray florescent analyzer?

Mr. BAUGH. Mr. Chairman, on March 4 we issued a notice to inform PHA's, as well as our HUD field offices, of the requirements of section 566 of the Housing and Community Development Act of 1987. That notice intended to provide instructions for fiscal year 1988 modernization application processing, since the processing would be virtually completed prior to the implementation of a final rule. That is to say the PHA's had to have submitted their preliminary modernization applications by March 4. This notice does not require the PHA's to fully implement all the testing as required by the new law because of our concern about the kind of information that we have been getting about the inaccuracy of the machines that were being used to test concerns that were being expressed about the dangerous hazards related to the abatement procedures that were being used.

Also, in that notice, we provided experiential data from some of the PHA's that had been involved in testing, as well as the abatement of lead-based paint.

Senator PROXMIRE. Let me follow up by asking you this: Your outline of suggested regulatory changes clearly says, and I quote, "The unnecessary cost and risk produced by unreliable testing is not tolerable."

The outline then says that the proposed regulation authorizes the Department to establish standards for safe and reliable testing through publication of such standards in the Federal Register as a public policy notice.

Mr. BAUGH. Yes, sir.

TESTING METHODS FOR LEAD-BASED PAINT

Senator PROXMIRE. In view of the confusion and debate over the reliability of existing testing methods, how can you justify setting such standards without the notice and comment period that are an integral part of the normal rulemaking procedure?

Mr. BAUGH. The notice that we sent out said pretty much what I just indicated. We did issue, on April 5, a proposed regulation for lead-based paint hazard elimination. There is a 30-day comment period which will expire on April 29, 1988, and then we anticipate that the final rule will be effective by June 5, 1988.

There appears to be some confusion that the notice we sent out on March 4 actually implemented the provisions that are in the new act. It didn't at all.

Senator PROXMIRE. Let me proceed a little bit further.

Your regulatory description talks of the Department's and I quote, ". . . great concern over the effectiveness and safety of various forms of abatement," and cites a study that found that 40 percent of the children in the family who are not ill before those paint abatement procedures are implemented become ill after abatement.

The regulatory description also expresses the view that the 18-month demonstration authorized by statute will contribute to the store of knowledge on safe and effective abatement, but the document goes on to say that you won't wait for the results of the demonstration before publishing testing and abatement standards.

Don't you, by not waiting, run the very real risk of making the situation worse?

Mr. BAUGH. Our Office currently is working with the Department's Office of Policy Development and Research to negotiate a contract with the National Institute of Building Sciences to develop standards and procedures for lead-based paint testing and abatement which would be used as guidance for PHA's prior to the results of a demonstration.

We are trying to expedite a process so we can get some standards for abatement as well as procedures for testing prior to the demonstration. The demonstration obviously would take a long time. The reason that we are moving in this direction is because we also have to deal with the ongoing modernization program. We already have issued a notice that indicates that prior to any comprehensive modernization, the PHA's have to test for lead-based paint. What we have tried to do in the interim is give the housing authorities some guidance until we can come up with standards after working with the National Institute of Building Sciences.

Senator PROXMIRE. It seems to me that moving forward too quickly on lead-based paint testing and abatement places a tremendous financial burden on the government without any assurance that the problem will be alleviated. In fact, it could be made worse.

Let me focus for a moment on cost. The regulatory change document talks of obtaining reasonably reliable tests by frequently recalibrating the testing equipment; by adequately training machine operators; by getting a number of readings in each spot tested and by allowing an adequate amount of time per test. That sounds quite expensive.

Then there is the added cost of the abatement itself. How much is this initiative going to cost and who is going to pay the bill?

Mr. BAUGH. I can't say at this particular time what the actual costs are going to be. One of the problems that we have in estimating costs is that we need to fine tune what the testing procedures and the abatement standards are gong to be. Then it seems to me, we will know better what some of these costs will be.

I only could indicate to you what we have paid for some of these things in prior years. Keep in mind, though, that the 1987 Act certainly calls for us to do much more than we had to do under the regulation that we issued back in August 1986.

COST ESTIMATES FOR LEAD-BASED PAINT

Senator PROXMIRE. There aren't any cost estimates you could provide for the record?

Mr. BAUGH. I will try to come up with some cost estimates. As I indicated, I can give you what we paid from 1984 to 1987 on a per-year basis for lead-based paint testing and abatement. I can give those to you.

Senator PROXMIRE. I understand this is a new ball game. If we could get prospective costs, it would be really helpful.

Mr. BAUGH. I will see what I can do and get back to you.

[The information follows:]

LEAD-BASED PAINT ESTIMATED COSTS

Based on estimates from the Abt study, "The Cost of Lead-Based Paint in Public Housing," July 1986, the best current estimate of the cost of lead-based paint testing, abatement, cleanup, and disposal in the nation's public housing is $1.1 billion. The Department is required by section 566 of the Housing and Community Development Act of 1987 to use available Comprehensive Improvement Assistance Program funds for meeting lead-based paint requirements. A demonstration program for the testing and abatement of lead-based paint which will be starting in the fall of 1988 will provide more accurate information on the best technical methods and costs for abating this health hazard.

FEDERAL HOUSING ADMINISTRATION

Senator PROXMIRE. Mr. Secretary, you are requesting $237.7 million for the Federal Housing Administration FHA fund an increase of $74.8 million. Your 1988 budget request anticipated payment of $3.3 billion worth of insurance claims while your current estimate is $5.03 billion. As you probably know, the Veterans Administration requested a $526 million supplemental for their Home Loan Guarantee Program. The level of foreclosures on it are VA guaranteed loans increased by 23 percent over the level planned in the fiscal 1988 appropriation.

Foreclosures have been high across the nation. What effect has this had on the FHA fund?

Secretary PIERCE. You mean the effect?

Senator PROXMIRE. The high foreclosure rate.

Secretary PIERCE. Oh, the high foreclosure rate has been harmful to the fund.

Senator PROXMIRE. Can you give us a specific range of what the effect has been?

Secretary PIERCE. Have you got the figures?

Mr. DEMERY. Yes.

Secretary PIERCE. Tom has got the exact figures.

Senator PROXMIRE. Mr. Demery?

Mr. DEMERY. Preliminary data through March indicates that claims were paid on about 47,000 defaulted mortgages in the amount of $2.7 billion. Based on our latest trends, claims in 1988 may exceed 90,000 cases or $5.4 billion.

Senator PROXMIRE. It is about $5 billion, so that is even higher.

Mr. DEMERY. Yes.

Senator PROXMIRE. Does that mean you are going to be drained in a few years?

Mr. DEMERY. Certainly, if this trend continues, yes. But I think right now that solvency is, what, $4.4 billion?

Secretary PIERCE. I am also bringing up here our Assistant Secretary for Administration, because she would be involved in this too, sir. I think we should have the benefit of her comments.

Senator PROXMIRE. Would you identify yourself, ma'am?

Ms. HOFMANN. I am Judith Hofmann, the Assistant Secretary for Administration.

Senator PROXMIRE. Thank you very much. Go ahead.

Ms. HOFMANN. Tom Demery, the Assistant Secretary for Housing and FHA Commissioner and I are looking into that issue right now. The mutual mortgage insurance fund is in a position right now that we are having to liquidate investments to pay claims because they are higher than we had anticipated.

We are doing a study to look into, over the next 3 to 5 years, what the cash position of the fund would be. The fund obviously has a tremendous number of assets, but in terms of our daily cash flow, we are having some problems because claims are higher than we had anticipated right now.

Senator PROXMIRE. I am going to ask Mr. van der Voort to follow up on that. Go ahead, sir.

Mr. VAN DER VOORT. I just wanted to ask if the current foreclosure situation continued, is the fund in trouble?

Ms. HOFMANN. It could be.

Mr. VAN DER VOORT. By when?

Ms. HOFMANN. From a cash standpoint. In the next 3 to 5 years, and that is what we are looking at right now. When we say from a cash standpoint, it might be from the position that we might have to ask for an appropriation. It does not mean in any sense that the fund would be bankrupt, because the assets of the fund are tremendous.

GAO STUDY ON PROPERTY ACQUISITION

Senator PROXMIRE. Thank you.

Mr. Secretary, the General Accounting Office, at my request, conducted a study on property acquisition that is scheduled for release today. The report made several observations regarding ways to minimize HUD's cost in acquiring foreclosed properties. The recommendation made by GAO was that HUD develop a program to provide homeowners the financial assistance necessary to sell their properties to pay the outstanding loan balances plus selling expenses.

The GAO felt HUD potentially could save several thousand dollars per property if this policy were implemented. I understand the Office of Insured Single Family Housing has requested you to submit a legislative proposal requesting authority to proceed with property sales during foreclosure. Has legislation been submitted?

Secretary Pierce. Not yet; no, sir.

Senator Proxmire. Do you plan to submit it, sir?

Secretary Pierce. To tell the truth, I have not thoroughly reviewed this situation, so I can't say that we will or we won't. If we think it is worthwhile, yes.

Senator Proxmire. I think it would be helpful.

Secretary Pierce. If you think it is helpful, we will submit a draft of some legislation.

Senator Proxmire. Good. We would appreciate that.

HUD loses about $400 per month when a loan in the foreclosure process, according to the Office of Insured Single Family Housing. The acquisition time for voluntary conveyance to the property deed in lieu of foreclosure averages 10 months compared to 16 months for foreclosures nationwide, according to a recent GAO study. The extra 6.7 months that it takes for foreclosures costs HUD $2,680 per property for foreclosures. While I realize that voluntary conveyance of the property deed in lieu of foreclosure releases the homeowner from the liability to repay the government, it seems like it would be a real plus for HUD to seriously consider increasing the number of voluntary conveyances.

HUD made almost 36,000 acquisitions between March 1985 and March 1986 and 11½ percent was made by voluntary conveyance rather than by foreclosure. I understand that lenders are currently making more aggressive attempts to obtain deeds through voluntary conveyances.

In February 1988, HUD began an evaluation of lenders' performance regarding their pursuit of opportunities for the voluntary conveyance of deeds. What does that evaluation consist of?

Mr. Demery. Jim? I would like to have Jim Nistler, my Deputy Assistant Secretary for Single Family respond to that, sir.

Senator Proxmire. What is your last name, sir?

Mr. Nistler. Nistler.

Senator Proxmire. Mr. Nistler. Very good, sir.

Mr. Nistler. We have asked each lender to look at each case more individually, and where it was more beneficial for us to take the lead and do it, we have been doing it. However, if we took deeds in lieu across the board, we would just have too many people walk away. We are trying to look at where it is beneficial for us.

Senator Proxmire. What is your goal for the number of voluntary conveyances in lieu of foreclosures for fiscal year 1988?

Mr. Nistler. As many as practical.

Senator Proxmire. You don't have a goal, in other words.

Mr. Nistler. No; I wouldn't know what it would be. I mean, we wouldn't know until we looked at each one individually.

Mr. Demery. It is a case-by-case basis.

Senator Proxmire. Case-by-case basis?

Mr. Demery. Yes.

Senator Proxmire. HUD loses money during the time it is reviewing a delinquent borrower for the mortgage assignment program. The assignment decision is usually made within 2 to 3 months after the request is received. During that time, the foreclosure process is delayed during fiscal 1987, HUD made assignment decisions on about 31,500 requests. A total of 5,300 borrowers were accepted into the assignment program. Based on the $400 per month estimate mentioned before, the cost HUD incurred for the loans not accepted into the assignment program was $21 million. What steps are being taken to continue the foreclosure process while cases are being reviewed for the assignment program?

Mr. NISTLER. We don't.

Senator PROXMIRE. Why not?

Mr. NISTLER. We have been in litigation with the *Farrell* case for some years, and any interruption of the borrower's rights would just get us back into court again. We would start the foreclosure, and your position, well, the ongoing process, would proceed. That is what the GAO study says. In the meantime, the *Farrell* case has had us in litigation for years.

Senator PROXMIRE. You have said there are legal reasons?

Mr. NISTLER. Yes.

Senator PROXMIRE. Would you submit for the record what those legal reasons are?

Mr. NISTLER. Yes; we will.

[The information follows:]

SINGLE FAMILY HOUSING—FORECLOSURE PROCESS DURING ASSIGNMENT REVIEW

The following are legal and administrative reasons why HUD does not continue the foreclosure process while cases are being reviewed for the assignment program:

—Regulations implementing section 230 of the National Housing Act prohibit the mortgagee from initiating foreclosure action until after a decision has been made by the Department not to accept the mortgage into the assignment program.

—In the 28 states that use the power of sale method of foreclosure, once the foreclosure process is initiated, there is no point at which the foreclosure can be interrupted if the Department rules to provide mortgage relief.

—Under judicial foreclosure, the most appropriate point to stop foreclosure is at the judgment of foreclosure. This is the point prior to the sale and the redemption period, if any. However, at that point the entire principal balance and delinquent interest become due and the mortgage is extinguished, voiding any possible mortgage relief that the Department could offer. To further complicate the matter, in some states the delinquent balance cannot be reaccelerated if the foreclosure action is withdrawn.

—About 25 percent of the cases considered for assignment are returned to the mortgagee for continued servicing. If the Department were proceeding with foreclosure, the costs incurred during foreclosure would pose an additional burden to the mortgagor attempting to bring his mortgage current.

REVIEW TIMES FOR ASSIGNMENT PROGRAM

Senator PROXMIRE. What can be done to shorten the review time for cases being considered for the assignment program?

Mr. NISTLER. We have cut the time down as to a goal of 90 days. It is almost a miracle to have them done in 70; just the mailing time and the waiting time, and we have got that into within a few days of the 90 across the board.

TERMINATION OF UDAG

Senator PROXMIRE. Thank you, sir.

Mr. Secretary, once again this year, you are recommending a termination of your $216 million Urban Development Action Grant Program. You heard an exchange between Senator D'Amato and myself. As I say, I was the author of that program about 10 years ago, and I think it is time to end it. You seem to agree, although you are going to have a fight in the Congress, I am afraid, and we will have to do our best.

We have tried that in the past. As you know Senator Armstrong has led the fight, and I have supported him on that, but it is not going to be easy.

According to the data contained on page B–7 of your justifications, your recoveries of prior year obligations were about $102 million in 1987, a sharp increase of the last year's estimates of $40 million. Can you tell us Why your initial estimate was so wide of the mark?

Secretary PIERCE. Jack Stokvis can answer that.

Mr. STOKVIS. My name is Jack Stokvis. I am the General Deputy Assistant Secretary in the Office for Community Planning and Development.

The reason our figures differed from the original projection was that we had underestimated the strength of the economy and it's effect on the recapture rate. This has happened several times.

Senator PROXMIRE. Will you tell us in detail for the record what the reasons were for that?

Mr. STOKVIS. We will provide for the record specifics on which of the UDAG's were recaptured and the reasons for that.

[The information follows:]

SUMMARY OF 1987 UDAG RECAPTURES

More grants were terminated during fiscal year 1987 than we had anticipated and a number of these were large grants. Eight projects alone accounted for $45 million of the funds recovered. A total of 71 grants were terminated, reduced, or canceled. It is difficult to accurately estimate the amount of reusable funds which will be recaptured during a given year because we do not know ahead of time which projects will encounter problems and not be implemented. The Tax Reform Act caused a number of projects to fall out last year because of the difficulties encountered with syndication.

Senator PROXMIRE. We appreciate that, because that does seem to be quite a difference, $102 million compared to $40 million. If we add up your projected recaptures for fiscal years 1987, 1988, and 1989, you get a total of $227 million. That exceeds the total appropriated for UDAG last year.

Can you tell us why you are projecting the continuation of such a high recovery rate?

Mr. STOKVIS. I would like to provide those specifics for the record also.

[The information follows:]

RATIONALE FOR 1988 RECAPTURE ESTIMATE

Based on actual recaptures of $102 million in 1987, we increased the recapture estimate for 1988 from $25 to $75 million. However, this year's recaptures are occurring at a much lower rate. Recaptures as of April 30, for fiscal years 19878 and 1988, are $31 million and $14 million, respectively. This situation again points out the problem of trying to accurately predict the amount of funds that will be recaptured.

Senator PROXMIRE. There also seems to have been a sharp falloff in your outlay rate for 1987. It is about 17 percent below last year's estimates for 1987. Is this drop related to an increase in recapture, or is it attributable to some other factors?

Mr. STOKVIS. I would like to give a detailed explanation for the record on that, too.

[The information follows:]

UDAG OUTLAYS

The lower than expected level of outlays has continued into fiscal year 1988. We originally estimated that the outlays in 1988 would be $400 million. As of April 30, 1988, only $139 million has been disbursed. Based on this, we have revised the estimate from $400 to $300 million.

We believe that this trend is a result of: (*a*) the large number of projects terminated last year; (*b*) the continuing decrease in the budget for the UDAG program which has resulted in fewer awards in recent years; and (*c*) the implementation of some projects being slowed down because of the uncertainties of the Tax Reform Act.

LEVERAGING OF PRIVATE FUNDS

Senator PROXMIRE. OK. Now I would like to ask you about leveraging private funds. On February 4, you announced a $2.6 million action grant to partially finance the construction of a 450,000-square-foot warehouse for use of the Helene Curtis Corp. This grant is supposed to trigger a private investment of $15.4 million. What makes you think Helen Curtis would not build this warehouse in any event, even if federal dollars were not committed to the project.

Mr. STOKVIS. The answer to this question really goes to the heart of the UDAG program. In reviewing this $2.6 million UDAG, the alternative for this company was to relocate to the suburbs outside the city of Chicago. What the UDAG did was to make the costs more comparable, so that jobs could be retained and new jobs created in the city of Chicago. It did leverage a $15.4 million private investment and over 300 new permanent jobs, of which 200 would be available to low- and moderate-income people.

Senator PROXMIRE. If I were the president of Revlon, how would you justify to me a federal handout of $2.6 million to allow my competitor to expand its operations?

Mr. STOKVIS. The answer to that is twofold. Revlon, which is headquartered in New York City, which is also a UDAG-eligible city, could also apply for a UDAG within New York City or in Chicago or another UDAG-eligible city. Second, UDAG's are given to a UDAG-eligible city—not a private company—to create jobs and economic development. In the case of New York City, there are several major companies that are attempting to build back office space in the outer boroughs with UDAG grants so that companies do not relocate to the neighboring state of New Jersey, which, as you know, would violate our 119(h) antipirating clause.

Senator PROXMIRE. I understand how the people who get the money would like it, but it seems to me that the competitor who pays taxes would obviously be concerned that at least some of his taxes, along with that of all the other taxpayers, are going to finance his competition. It seems to me that here is another great argument that hadn't occurred to me, really, before, as to why UDAG is hard to justify.

Mr. STOKVIS. As you know, Senator, this is the 10th year of the UDAG program, which was developed to stimulate the economies of the most distressed and most impacted communities in the country. It has done that, and in fact, of the $4.5 billion of the UDAG program to date, over $28 billion has been leveraged.

Senator PROXMIRE. Helene Curtis' warehouse, does that qualify as being in a depressed area?

Mr. STOKVIS. The warehouse is within the city of Chicago, and the reason the project cost so much is because they had to demolish some existing structures. The city of Chicago is quite built up as are most older cities. The alternative for the Helene Curtis Co. would have been to relocate into a suburban area where there was vacant land. What the UDAG did was to keep the company and its jobs and local taxes in the city of Chicago.

Senator PROXMIRE. Another UDAG grant that was approved on February 4 was for $1,225,000 to partially finance the construction of a podiatric clinic to be managed by a private college in the city of Cleveland. Although the average UDAG dollar averages $6, private, the ratio of public-to-private dollars for this project is only about 3 to 1.

Furthermore, it will create only 10 new permanent jobs. That means the taxpayer puts up $122,500 for every job created.

Can you tell us why you funded a project that leverage relatively few private dollars and creates very few permanent jobs?

Mr. STOKVIS. Yes, Senator. The reason this happened is because the city of Cleveland ranks high on our impaction and distress rankings, and I will give you an example on the large issue. The UDAG selection formula, as you know, gives 70 points under both the existing and new formulas, for the impaction and distress of a community.

As a result, the two most distressed communities in the United States—Buffalo, N.Y., and Hoboken, N.J., would in all probability always get a UDAG, no matter how the other project variable factors, which total an additional 30 or 35 formula points are rated.

For example, if there was a very low leverage ratio and a small number of jobs, the high impaction and distress points would place those two communities high on the UDAG ranking competition listing.

Senator PROXMIRE. Are you telling me that the law mandates that you would have to go ahead under those circumstances?

Mr. STOKVIS. No; the law sets up the selection criteria.

Senator PROXMIRE. If you have any discretion there, it would seem to me when you see $122,000 for a job, we are trying to help people with low incomes and people who are unemployed and work for relatively little. That is ridiculous, isn't it?

SELECTION CRITERIA FOR UDAG GRANTS

Mr. STOKVIS. The program is run as a competition, where the economic criteria of the community, the impaction and distress, plus the project points, get rated and ranked, this competition ranking is then presented to the Secretary, who makes the selection cutoff depending on the amount of money available to him. But I wanted to go further.

Given the fact that we are, for the second time this year, going to do a large city UDAG round, for which Cleveland is eligible, you could also hypothetically see communities which are the least distressed and least impacted and which are, therefore, at the bottom of our impaction and distress lists—Titusville, Fla., and Oxnard, Calif.—but which have tremendous leveraging and job ratios, receive a grant.

Under the new two-point system, they would get funded if they received a high number—up to 35 project points—even though they are far less impacted and distressed than Cleveland. So the reverse of what you said could occur.

Senator PROXMIRE. It seems to me the decision ought to be to be on the side of not spending the money in either event. You get down to a point where here, it is 10 jobs, $122,000 a job. Could you conceivably get down to a point where you have one job, $1 million a job and say, "Well, go ahead, it is a very distressed area."

Mr. STOKVIS. It is difficult to talk on hypothetical cases. Furthermore, as you know, Senator, in our fiscal year 1989 budget we are not asking any money for the UDAG program.

Senator PROXMIRE. Well, that is good. [Laughter.]

PROMOTION OF FAIR HOUSING LAWS

I understand I have got one example here that I won't bring up in detail or ask about, but it $500,000 for one job, per job.

Mr. Secretary, I am troubled by an article appearing in December 27 Los Angeles Times. It indicated the developers, realtors, and contractors who do business with the Department contributed to a 3-year professional road show to promote public awareness of fair housing laws.

The activities were staged in eight cities and cost $1 million. Some of the developers were losing contractors who were solicited for contributions at projects awaiting HUD approval the article alleges, and I quote:

> In some cases, developers received rather blunt demands to contribute a minimum of $3,000. But Tom Safran, for example, who manages hundreds of HUD subsidized rental units, sent a check for $100 only to have it returned with a letter chiding him for not contributing more.

Mr. Secretary, don't you think this kind of solicitation raises conflict of interest questions?

Secretary Pierce. Well, I have some questions about the facts alleged in that article. As a matter of fact, I have had my Inspector General look into it. He has given me a report. I am studying that report, and I may have some further investigation made of it. But what I will say at this point, I have some questions about the article and its facts.

Senator Proxmire. I certainly want to get as much information on that as possible, because it just seems to me to be shocking.

Secretary Pierce. What will happen, when I finish reading my Inspector General's report and any comments my General Counsel has on that report, I will decide whether any future investigation is necessary, and eventually, what action I should take on the report. At that point, I will make the Inspector General's report and any other reports I have on this subject matter available for observation; you can have them.

Senator Proxmire. Let me ask you about this. Is it a fact or is it not a fact that developers received blunt demands to contribute a minimum of $3,000?

Secretary Pierce. I don't believe there was such a thing.

Senator Proxmire. I am all for fair housing. I want to congratulate you on being enthusiastic for it. You have done your best to sell it and that is to your greet credit.

Secretary Pierce. As far as I am concerned, there was no blunt demand as far as I know.

Senator Proxmire. Even if the appeals were sensitive and sophisticated and gentleand subtle, even still, isn't there a conflict of interest here?

Secretary Pierce. That depends on how this was done and so forth. There were General Counsel reports, opinions and so forth on this, and that is all part of review. I am going into all of this.

Senator Proxmire. Make that review as soon as possible.

Secretary Pierce. I have a few things to do, but I will do it.

Senator Proxmire. I know, but neither nor I are going to be here next year. [Laughter.]

Secretary Pierce. I will do it when I can, the best I can, and I want to do it as thoroughly and as right as I can, because there are some very, very innocent, I underscore that word, people involved in this.

ACCOUNTING FOR FUNDS RAISED FOR FAIR HOUSING

Senator Proxmire. This article says there has been no public accounting of the money that has been raised. Can you tell me how much was raised and how it is being spent?

Secretary Pierce. No; I don't know. I wasn't involved in the thing. That is why I have to have people report to me on it.

Senator Proxmire. That occurred almost 4, well, 3½ months ago, December 27.

Secretary Pierce. Yes.

Senator Proxmire. It seems to me that meanwhile, it is such a shocking charge that there should have been an investigation or a report made available.

Secretary PIERCE. The investigation was ordered immediately, but there are things we run into.

Senator PROXMIRE. As I said, there has been no public accounting on the money that has been raised. Can you tell me how much was raised and how much at this time is being spent?

Secretary PIERCE. I don't know.

Senator PROXMIRE. The Housing Affairs letter, January 29, says that, and I quote:

> Reports allege that the campaign gives greater promise to Pierce than to fair housing.

The L.A. Times article says:

> Deep budget cuts have brought HUD construction programs to a near standstill, providing a few opportunities for Pierce to appear at upbeat public ceremonies. But the fair housing campaign was a media event that gave the Secretary a chance to score a few points promoting a worthy cause.

How do you respond to those criticisms?

Secretary PIERCE. That is a lot of baloney; that is how I respond to that; not worth an answer.

Senator PROXMIRE. Well, did you or did you not make appearances as a result of the contributions that provided an opportunity for you to appear?

Secretary PIERCE. I appeared in Los Angeles, yes.

Senator PROXMIRE. Give me what you can for the record, Mr. Secretary, in detail. You expect that report to be available, you say, sometime——

Secretary PIERCE. When I finish doing what I said I would do, I will make that report available.

Senator PROXMIRE. Would you make that report available by——

Secretary PIERCE. I don't know when. I must do these things. I have to look into it myself.

Senator PROXMIRE. As I say, this appeared December 27. This is now the middle of April. Conceivably, that would mean that you wouldn't give me a response until next December. Obviously, then neither of us would be around.

Secretary PIERCE. I don't know how long it will be, but I have to look into it, and I have to do it.

Senator PROXMIRE. Do this: Will you make the report, say, by September 1?

Secretary PIERCE. I just don't want to tie myself to time.

Senator PROXMIRE. Give us an interim report. Give us what you can.

Secretary PIERCE. I will give it to you when I finish. I will give a copy of the report to you. I do not want to give interim reports. I will finish the report and I will get it to you. I will do it as fast as I can, but I do not want a time limit. I am going to do it. It is like investigating cases; it is like a D. A. with a case. You go to a D.A. and you say, "The murder happened 2 nights ago. Will you try the case in 2 months?" He doesn't know.

REQUEST FOR UNDER SECRETARY TRAVEL BETWEEN HOME AND OFFICE

Senator PROXMIRE. I certainly hope we have it before we mark up the budget, otherwise, we might have to do it on the basis of making the worst case assumptions. Mr. Secretary, Chairman Boland received a letter from you dated March 30 regarding the use of departmental transportation for travel between home and office.

This practice is expressly prohibited by section 406 of the Appropriation Act of 1988. You are exempted, of course, because of your rank as Secretary of the Department.

I understand that the letter encouraged Representative Boland to remove that section from the 1989 Appropriation Act. I assume no one else is currently using departmental transportation as travel between home and work. Is that correct, no one else in the Department?

Secretary PIERCE. There is no one else that uses it except we are trying to get the Under Secretary the privilege of doing that because as I understand it, every other Under Secretary in the administration is able to do it; every other Under Secretary or Deputy Secretary is able to do it, and we don't see any reason why, under those circumstances, Mr. Covitz shouldn't be allowed to do it also.

Senator PROXMIRE. Well, our bill provides only, unfortunately, for your Department. You are the one Department we have got. We have made a struggle for this. You make a good point. I understand there is no reason why we should discriminate against one Department compared to another. But I would love to see you provide an example for the rest of government. I don't understand why an able-bodied person, man or woman doesn't have to run to work, but why they can't [laughter] can't take a subway or a taxi or drive a car. Even Senators don't have chauffeured limousines. People at home think we do. It is so costly. What is it, $45,000 when you consider it? That is a big share of, that is about half the income that a Cabinet officer or a Senator has.

Secretary PIERCE. But the person also has to pay taxes on that. The imputed income of the car, the person would have to pay taxes on that.

Senator PROXMIRE. You mean that——

Secretary PIERCE. That adds about $2,000-some-odd dollars or so to his income, maybe $2,000, $3,000 to his income a year that he gets no cash for but which he pays taxes on. When you are in a high enough bracket, it hits a little bit.

Senator PROXMIRE. From the standpoint of the taxpayer, we could help everybody. We could help him not have to pay those taxes and we could save the taxpayer a great deal of money in the process by just proceeding this way.

At any rate, it seems to me that the law is clear on it. I know you oppose the law. You said that. I understand it. It is a perfectly understandable case that you don't think you should be discriminated against as a department. I think that is right that you feel that way.

But this could be, on the other hand, a first step toward taking more and more people out of limousines.

EMPLOYMENT OF WOMEN AND MINORITIES

Now let me ask you to turn to the question of employment of women and minorities. What percentage of the total work force of HUD is composed of women and minorities?

Secretary PIERCE. I will have to get my Assistant Secretary for Administration, Ms. Hofmann.

Ms. HOFMANN. Mr. Chairman, as of December 1987, it was 67.3 percent.

Senator PROXMIRE. 57.3 percent?

Ms. HOFMANN. 67.3.

Senator PROXMIRE. What proportion of those are women? Can you break that down?

Ms. HOFMANN. I don't have the breakout by women, Mr. Chairman. I have got it by grade level for women and minorities, but I can provide it by women for you for the record.

[The information follows:]

Within the total of women and minorities in the Department, 81.6 percent are women.

Senator PROXMIRE. In last year's hearing, Ms. Hoffman told the committee that 14.4 percent of the total number of SES employees were women. SES, that is, What is the percentage today?

Ms. HOFMANN. Again, sir, I have got the total by women and minorities, which is 31.7 percent. I will provide for the record that percentage that would be women.

[The information follows:]

Women make up 16.1 percent of the Senior Executive Service at HUD.

Senator PROXMIRE. Last year, the percentage of minorities employed at the GS-12 and above level was 12.6. How has that percentage changed?

Ms. HOFMANN. The percentage for 12 and above for minorities is 12.1 percent.

Senator PROXMIRE. All right, then. If I add 12, would it be fair to add the 12.6 to the 14.4 and come up with 17 percent last year. Is that right? Wait a minute; 27 percent last year?

Ms. HOFMANN. I am sorry, sir; I didn't understand.

Senator PROXMIRE. Last year, I take it that the total number of minorities and women who were SES employees was 27 percent.

Secretary PIERCE. Not necessarily, because you have got some others.

Ms. HOFMANN. I don't think you can do that, sir. I can provide the breakout for you for the record. If you are female minority——

Senator PROXMIRE. Some of these women were minorities, too.

Ms. HOFMANN. Yes, sir.

IMPROVEMENTS IN HIRING OF WOMEN AND MINORITIES

Senator PROXMIRE. I see. Let me ask you, Mr. Secretary, what activities are you undertaking to pursuing to increase these percentages? Obviously, whatever the record is, for the SES employees, the higher paid positions in the agency, the record could stand an improvement, substantial improvement.

Secretary PIERCE. We constantly talk about it at principal staff meetings. It is a very clear thing. I am conscious that my Assistant Secretaries and the heads of offices have it on their minds, are trying to do it, and we think we are making improvements. But also, we want to make sure we get people who are certainly able to do the jobs in question.

Senator PROXMIRE. Do you have specific goals?

Secretary PIERCE. Well, we have goals, but not——

Senator PROXMIRE. Quotas?

Secretary PIERCE [continuing]. Not quotas; yes.

Senator PROXMIRE. In 1985, there were 47 graduates of the Department's upward mobility program of which 43 were women. In 1986, there were 92 graduates, with 83 women. That is a very impressive increase in the number of graduates, practically doubling, and also, it is encouraging to see how many of them were women.

But I am curious. That was 1985 and 1986. I am curious about how many graduates were there in 1987?

Ms. HOFFMAN. We will have to provide that information for the record, Mr. Chairman.

[The information follows:]

UPWARD MOBILITY

The following table provides the number of female and male Upward Mobility graduates during 1987:

Female	69
Male	6
Total	75

Senator PROXMIRE. Can you tell us on the basis of your knowledge as to whether the rough proportion was about the same; in other words, about eight out of nine women?

Ms. HOFMANN. I am sure that it probably remains pretty much the same, because those are your lower level positions, Mr. Chairman, and they are primarily encumbered by women.

Senator PROXMIRE. Thank you very much, Mr. Secretary, and thank you.

SUBMITTED QUESTIONS

[The following questions were not asked at the hearing but were submitted for response for the record:]

QUESTIONS SUBMITTED BY SENATOR PROXMIRE

EMERGENCY ASSISTANCE TO THE HOMELESS

Question: Your justifications indicate that the Federal Emergency Management Agency (FEMA) also provides emergency programs to the homeless which can be used for the same purposes as Emergency Shelter Grants. FEMA is requesting a $34 million decrease in their Emergency Food and Shelter program. Doesn't this make it extremely difficult for FEMA to take up the slack if the Emergency Shelter Grants program is eliminated?

Answer: There are clear indications that emergency shelter needs are being satisfactorily addressed in many communities and that there is a greater need for transitional and permanent housing. We continue to believe that the FEMA program, and other existing programs are sufficient to meet emergency shelter needs.

1988 OPERATIONAL PERIOD FOR THE INTERAGENCY COUNCIL

Question: You are requesting $1.2 million for the Interagency Council on the Homeless, and increase of $250,000 over your fiscal 1988 estimate. Your justifications indicate that the increase can be attributed to full year operational costs for the Council versus partial year operations in fiscal 1988. What portion of fiscal 1988 was the Interagency Council on the Homeless operational?

Answer: The Interagency Council on the Homeless was origanized in September 1987. Although the Executive Director did not join the Council until January 1988, there were activities, paid for by funds made available to the Council, in December 1988. Other costs incurred by the Council during the first quarter of fiscal year 1988 were assumed by HUD.

1988 ACCOMPLISHMENTS

Question: What was produced with the $950,000 used in fiscal 1988 [for the Interagency Council on the Homeless]?

Answer: The Interagency Council on the Homeless has several statutory responsibilities, including collection and dissemination of information, providing professional and technical assistance, and preparing annual reports to the President and Congress. Consistent with these responsibilities, the $950,000 budgeted for the Council for fiscal year 1988 is being used for: (1) Regional workshops and meetings on the homeless coordinators from HHS, HUD, and GSA; (2) contracts and services necessary to accomplish the publication of the annual report mandated by the McKinney Act; and (3) staff support. The Council has published and distributed a brochure containing information on contact points for the various programs under the McKinney Act. In addition, the Council is planning to publish a newsletter highlighting innovative and successful programs that are successfully meeting the needs of the homeless.

SINGLE FAMILY HOUSING--AUCTION SALES

Question: According to a recent New York Times article, HUD held 35 auction sales in Texas last year for single family homes. This is a controversial sales tool that appears to damage real estate markets where the auctions are held. Have you done a comparison of average prices of auction sales versus regularly processed sales?

Answer: Each Field Office does comparisons of sales prices for auctions versus prices received on regular sealed bid sales. Generally, they have found that the average auction price is less than the average price for regular sales. Auction prices are lower in large part because properties included in auctions are generally those which have been in inventory for longer periods of time and are often in poor physical condition. Offices consider this and other data when making determinations on whether to hold future auctions.

The majority of the 35 auctions cited in the news article were conducted by the Houston Office between January 1987 and July 1987. During that time Houston held 28 auctions. Since that time, Houston has dramatically reduced the number of auctions held. Only one has been held in recent months while two more have been scheduled for the remainder of the year.

Question: How old are the properties that are being auctioned? Please give me the average and the range.

Answer: No specific information is maintained regarding the age of such properties. Normally, the properties that are placed in an auction have been in inventory 6-months or more. Such properties generally have been actively marketed under regular sealed bid procedures prior to being placed in the auction.

Question: Will you use auctions as a sales tool in fiscal 1989?

Answer: It is anticipated that auctions will continue to be an available sales tool in fiscal year 1989. However, the determination to use this tool is left up to Field Office discretion, provided it is done in accordance with policy as set forth in the Property Disposition Handbook and further clarified and amended by memorandum of July 27, 1987 (see attachment). In this regard, Field Offices generally use auctions only on a limited basis, after normal sales efforts have been exhausted.

Question: [If so] How many auctions do you intend to hold and where will they be located?

Answer: We do not have a specific schedule for auctions in the upcoming fiscal year. Auctions may be used as an available sales tool where appropriate. Such determinations are generally not made well in advance but as the fiscal year progresses. The decision to conduct an auction is usually based on factors such as property acquisitions, market conditions, etc.

SINGLE FAMILY HOUSING--FEE APPRAISERS

Question: The General Accounting Office (GAO) came out with a report in September 1987 that was highly critical of using fee appraisers to conduct field reviews in the single family housing program. I understand that you have implemented a training program to increase the number of HUD staff appraisers available to complete field reviews. What percentage of field reviews are currently being completed by HUD staff instead of fee appraisers?

Answers: In response to the GAO report, Field managers have been directed to perform as many reviews as possible with HUD staff. We are advised that due to the increased number of HUD staff appraisers and the current lower level of workload that most reviews are now being done by HUD staff. Unfortunately, our automated system is not yet able to track the percentage of Field reviews completed by HUD staff. However, we feel that close attention by program managers is an effective means of effecting this policy.

In addition, for the unusual circumstances where reviews must be performed by fee appraisers, such as in remote areas where time and travel constraints occur, the Department has required Field offices to establish Field review panels so that no reviews are being done by fee appraisers who are also doing appraisals.

Question: Will HUD make the training program permanent as a means of assuring a quality appraisal program or is this simply a stop-gap measure?

Answer: HUD intends that the training program be a permanent endeavor.

MORTGAGEE REVIEW BOARD

Question: Last year you indicated that as a measure to prevent fraud and abuse in the Direct Endorsement program you strengthened the Mortgagee Review Board. According to a recent Inspector General report, 21 mortgagees have been referred to the Mortgagee Review Board for administrative sanctions and 121 individuals or companies have been recommended for debarment. What has happened with these cases? Have any disciplinary actions resulted?

Answer: The Mortgagee Review Board has taken administrative action in connection with all 21 mortgagees cited in the Office of Inspector General Semi-Annual Report to Congress No. 18 for the 6-month period of April 1, 1987 through September 30, 1987. The Board withdrew the HUD-FHA approval of six mortgagees from further participation in the FHA mortgage insurance programs and placed one lender on probation. The Board also entered into Settlement Agreements with 14 mortgagees which provide for indemnification to the Department for actual and potential claim losses totalling $7.7 million. Since that time, there have been 24 additional referrals to the Board.

There were 121 recommended debarments of individuals and firms in relation to the 21 mortgagee cases cited in the Office of Inspector General Audit Report. To date, 32 debarment and 24 suspension actions have resulted from these recommendations.

LOAN ASSET SALES

Question: Page J-2 of your justification indicates that you have planned loan asset sales representing unpaid principal balances of $544.2 million and $145.7 million for 1988 and 1989, respectively. Last year in your justifications you assumed loan asset sales of $300 million in outstanding loan balances in fiscal 1987, expected to result in net sales receipts of $200 million. You actually received only $10.6 million in sales receipts for fiscal 1987. Given past experience don't you think that the anticipated sales receipts for fiscal 1988 and 1989 are somewhat unrealistic?

Answer: The auction sale proposed for 1987 in the 1988 Budget was initiated last summer; however, on July 6, 1987 the United States District Court for the Northern District of California issued a preliminary injunction which precluded the Department from proceeding with the sale. There were no receipts from this sale in 1987.

As you stated, actual receipts from mortgage sales only amounted to $10.6 million in 1987. These proceeds, however, did not result from "auction" sales but from "foreclosure" sales of delinquent HUD-held mortgages where a third party outbid HUD for the project which secured the delinquent note. The "special auction" sale on the other hand consists of an inventory of current mortgages, normally in excess of a hundred notes, which are offered for sale at one time.

We believe that the sales proceeds projected for 1988 and 1989 are realistic. We have recently hired a financial consultant who will aid in structuring our portfolio and offer overall guidance. While the approach is expected to differ in a number of aspects from earlier auction sales, the final approach will not be known until after the private financial advisor has provided recommendations.

LOAN ASSET SALES

Question: How much of a loss did you take on your 1987 sales?

Answer: During 1987, HUD was outbid at foreclosure sales on $29 million face amount of delinquent, multifamily mortgage notes and received proceeds from third party purchasers in the amount of $43.1 million. Of the total proceeds, $32.5 million was applied to accrued and delinquent interest, advances, and other items relative to servicing the mortgage. The balance of the sales price--$10.6 million--was applied toward the unpaid balance of the mortgages leaving $18.4 million to be written off by the Department.

Question: I see that you intend to hire an advisor from the private sector to assist the Department in the selection and marketing of all HUD portfolio loans. The advisor's services are expected to cost between $500,000 and $1.3 million over a 3-year period. When will the advisor be selected?

Answer: On May 8, 1988, the Department entered into an an agreeement with Paine, Webber and Company for that firm to assist in selecting and marketing mortgage loans held in the Department's inventory.

Question: What will the financial advisor do to command that kind of reimbursement?

Answer: The Financial Advisor is expected to provide a broad range of services covering loan asset sales and loan asset management for three different portfolios: Public Facility loans, FHA Multifamily mortgages assigned to HUD and FHA single family mortgages assigned to HUD (as well as Purchase Money Mortgages (PMMs) issued by the FHA).

The following are some of the functions the Advisor will perform:

--review the various portfolios and assist HUD in identifying and selecting loans with good sales prospects;

- provide HUD with guidance, based upon review of the portfolios, on the appropriate sales approach for each of the portfolios and identified loan classes within the individual portfolios;

--provide the Department with advice and guidance on the factors which need to be considered in the selection of underwriters and loan servicers, the preparation of any announcements and bidding proposals and contract negotiations with prospective underwriters and servicers;

--work with the underwriters (representing HUD's interest) in the structuring of any securities which are to be collateralized by loans or loan cash flow;

--work with the selected underwriters in negotiating with rating agencies and, if necessary, with providers of external credit enhancement;

--represent the Department's interest during the actual sale by underwriters of the securities;

--provide training to HUD staff on necessary loan review and packaging techniques; and

--provide written reports to the Department on recommended changes to HUD's loan servicing practices.

MULTIFAMILY--FRAUD, WASTE AND MISMANAGEMENT

Question: According to a February 1988 report from HUD's Office of Inspector General, numerous violations involving the misuse of project assets or income have occurred in HUD-insured and HUD-held multifamily housing projects. The Office of Inspector General cites this example: "...in conjunction with 81 audits performed during the period FY 1984 through the first half of 1987, (OIG) identified about $19.1 million of misused or diverted assets/income by mortgagors and management agents."

The Office of Inspector General also states that when they reviewed why diversions of assets and income were occurring that, "in 77 percent of the cases, the misuse or diversion of assets/ income occurred because of an apparent willful disregard of the provisions of the Regulatory Agreement." This indicates that the mortgagor/management agent made a conscious choice to violate the Regulatory Agreement provisions. Is the Department taking any steps to agressively regulate the activity of mortgagor/management agents?

Answer: The Department uses the Inspector General (IG), who has the investigative authority and the authority to seize records as evidence, to substantiate program administrative findings by requesting them to perform audits.

This is done in order to provide the Office of General Counsel and the Justice Department with sufficient evidence to pursue litigation against the offending owner/manager. The IG report notes that only 26 percent of the violations findings were the result of independent audits. The remaining 74 percent were substantiated on projects where Housing had requested the investigation in order to pursue litigation.

HUD has taken several steps over the past 5 years to improve its monitoring capability and reduce the small number of instances where owner/managers purposely fail to follow HUD's requirements. These include:

1. The Department's request and Congress' subsequently enacted legislation (the Housing and Community Development Act of 1987 provisions under Section 416 "Equity Skimming", and Sections 421 "Double Damages Remedy") for unauthorized use of project assets. The penalty for equity skimming was raised from a maximum fine of $5,000 and an imprisonment of up to 3 years to a fine of not more than $250,000 and imprisonment of not more than 5 years. As to illegal use of assets or income in violation of regulatory agreements, the Attorney General now may recover double the value of the misappropriated funds; and

2. HUD's automation of the annual financial statements and risk determination analyses. This automation will be implemented nationwide by the end of the first quarter of fiscal year 1989, and will expedite HUD's analysis and allow us to pursue the exceptions that will be flagged. Therefore, in those rare instances that a project owner should choose to ignore the regulatory requirements, Housing will identify the case earlier and will also reduce the number of instances where the IG discovers the diversion independent of Housing.

These two Housing generated initiatives will prevent the vast majority of owners from pursuing a non-compliance course. While there is no foolproof system which will totally eradicate dishonesty, HUD is committed to root out all instances of fraud, waste and mismanagement and to make examples of those who perpetrate such actions.

MULTIFAMILY--FRAUD, WASTE AND MISMANAGEMENT

Question: According to GAO you are consolidating several automated systems into the Multifamily Information Processing System (MIPS). One of the systems included in the automation initiative is the Office of Loan Management System (OLMS) which is currently supposed to be used to detect diversions. The report indicated that MIPS would become operational in February of 1988. Is the system operational?

Answer: The system is not operational but is being developed. However, the Financial Statement personal computer (PC) work application (incorporating all aspects of OLMS) is scheduled for implementation in twelve multifamily Field offices on May 24, 1988. The remaining multifamily offices are scheduled for implementation during October 1988 (for the Financial Statement and a few other applications).

USE OF INFORMATION

Question: [If so] Are the field offices prepared to use the information generated by the system?

Answer: One representative (an expert in the applicable Housing discipline) from each Multifamily Field Office receives 2 days of intensive training in Headquarters. The trained representatives return to their respective offices and train associates in the same discipline.

All hardware is installed in the Offices and an ADP person is employed by each Office to provide technical assistance as required.

MULTIFAMILY--FRAUD, WASTE AND MISMANAGEMENT

Question: A recommendation made by the Office of Inspector General is to strengthen multifamily loan servicing capabilities. This could be done by implementing recommendations made in an earlier report completed by HUD's Committee on Fraud, Waste, and Mismanagement (#84-2). Have you developed a formal long-range workplan to strengthen multifamily loan servicing capabilities?

Answer: With input from our Field Offices, Housing has increased emphasis on financial analysis of HUD-insured and HUD-held projects. This has been established as a Management Plan priority. We have developed and are now implementing a Management Improvement Plan application which will promote more timely analysis and follow up on findings identified in financial reviews. While there is no formal long-range workplan for strengthening multifamily loan servicing, HUD staff is working to improve both data gathering technology and analytical methodology applied to their important function.

OIG REPORT

Question: The report referred to by the Office of Inspector General was presented to you in abstract form in April 1985, Secretary Pierce. Why weren't the recommendations from the earlier report implemented shortly following its receipt?

Answer: The IG recommendations have not been ignored. Housing either had implemented or was in the process of implementing the Inspector General's original 1985 recommendations when the 1988 report was received.

HUD requested legislation in 1986 and 1987 (subsequently included in the 1987 HCD Act) to strengthen loan servicing capabilities. Housing and the Office of Administration have been working on the Management Improvement Plan application for 3 years and the requirement to perform 100 percent financial analysis yearly has been a management goal for the Field for the past 3 years. HUD has responded to the IG recommendations and will continue to pursue and correct misuse of project assets.

TOP MANAGEMENT VACANCIES

Question: I understand that the reason the report wasn't forwarded to the Housing Commissioner at its completion in April 1985 was due to a vacancy in the Housing Commissioner position. Vacant positions at the Department are not a new occurrence. Currently almost half of HUD's assistant secretary positions are vacant. With top management positions empty it is difficult to determine and carry out Departmental policies and Congressional mandates. Mr. Pierce, why have you had so many vacancies at top levels?

Answer: Of the 11 Assistant Secretary or equivalent positions within the Department, seven are currently filled and four are vacant. The vacancies are the Assistant Secretaries for Community Planning and Development, Public and Indian Housing, Public Affairs, and Legislation and Congressional Relations. For each of these vacancies, a qualified deputy or other high level person is acting in the assistant secretary's stead.

Candidates have been tentatively selected for three of these positions and are undergoing the required background investigations and further White House review. The Assistant Secretary for Public Affairs is the only position for which a candidate has not been selected. Until such time that these nominees are confirmed, I have confidence in those who are effectively carrying out Departmental policies and Congressional mandates.

URBAN DEVELOPMENT ACTION GRANTS-CONCENTRATION OF AWARDS

Question: According to the NAHRO Monitor, more than 80 percent of all UDAG grants have gone to only eights states over the past four years. Can you tell us why there has been such heavy concentration of grants in so few states and whether you are taking steps to broaden fund distribution.

Answer: Our records show that since October 1, 1984, the eight States which have received the most awards have accounted for 62 percent of all UDAG funds awarded during that period. These eight States have about 30 percent of the overall population and a much higher percentage of the economically distressed populations, as defined by the UDAG statute.

UDAG is a very targeted program; however, recent amendments to the UDAG selection system contained in the Housing an Community Development Act of 1987 address the problem of heavy concentration of UDAG funds in certain regions of the country.

RADON-RESEARCH COST

Question: You are requesting $19 million in fiscal year 1989 for Policy Development and Research, an increase of $2,488,000 over your current budget. You indicate on page 5 of your justifications that a portion of the budget will be used to continue studies on the impact of radon on indoor air quality. Can you tell us how much will be spent on radon research?

Answer: In fiscal year 1989, we expect to spend approximately $100,000 of Research and Technology funds on radon research.

RADON

Question: GAO recently completed a study on indoor radon, which causes between 5,000 and 20,000 lung cancer deaths per year in the United States. The GAO report indicates that "HUD is presently responding to radon hazards in a limited, piecemeal manner." GAO recommends that you and Lee Thomas, the Administrator of the Environmental Protection Agency, define your respective responsibilities and planned actions in response to your shared legislative mandate under Title IV of the Superfund Amendments and Reauthorization Act (SARA) of 1986. Are you taking any steps to carry out that recommendation?

Answer: The Department, in cooperation with the Environmental Protection Agency, has already met the requirements of Title IV of the Superfund Amendment and Reauthorization Act of 1986, commonly referred to as SARA. The Superfund legislation clearly gives EPA the lead responsibility for establishing an advisory committee, developing an implementation plan, coordinating with HUD in conducting research, reporting to Congress and providing funding authorizations.

In response to the GAO report, HUD's Office of General Counsel rendered a legal opinion concerning the Department's authority for taking action with regard to radon. The opinion, issued on May 20, 1988, confirmed HUD's position that the Superfund legislation gave the lead responsibility for establishing a program with respect to radon gas and indoor air quality to the Environmental Protection Agency. The opinion stated that HUD attorneys "know of no other statute which requires HUD to act with respect to radon, e.g., to establish standards or guidelines, perform research, require testing, abatement or disclosure, or otherwise 'deal with' radon."

HUD believes that EPA has done much to meet the requirements of Title IV. As a result of EPA's efforts to meet the SARA requirements, HUD has been part of an ongoing EPA-led committee that has been established for coordinating radon related research and on-site testing programs. The committee called the "Interagency Committee on Indoor Air Quality (CIAQ)", has developed a plan of action for Federal agencies with responsibility for this issue. The plan published by EPA in March 1988, is entitled "Current Federal Indoor Air Quality Activities."

In addition, to coordinating its radon related activities through the EPA led CIQA, HUD is a member of the Committee on Interagency Radiation Research and Policy Coordination (CIRRPC), under the direction of the President's Office of Science and Technology. In 1988, HUD is providing $40,000 in CPD funds to CIRRPC to support the activities of the Committee which is looking into radon and other radiation-related issues.

In addition to these formal coordinating mechanisms, HUD and EPA staff are in regular contact and communication to ensure an effective and non-duplicative delivery of available on-site technical assistance and research funding. Most recently, HUD contributed an additional $40,000 in research funds from its Office of Policy Development and Research, to support an EPA led project with the National Bureau of Standards (NBS). The project will examine methods that can be used to determine the potential for radon at specific building sites. Work activities on this project are currently underway.

Question: HUD's reaction to the radon problem seems to be indifference at best. While radon is recognized as a major health risk in housing, HUD refuses to play an active role in dealing with it. Given your mandate under Title IV of SARA to work with EPA to conduct research on radon contamination in new construction as well as research measures for avoiding indoor air pollution, do you intend to develop a policy regarding radon?

Answer: HUD has a radon policy that can be traced back to at least 1979. The HUD policy is to provide assistance on radon matters on a case-by-case basis at the request of State or local government officials. The assistance provided is developed to meet the specific needs of the situation based on the radon phenomenon, the scientific information available at the time, and the requests of the community. The Department believes that the best policy is one that is designed to have maximum flexibility to permit the Department to provide program responses which address local needs and conditions. This ability to respond quickly, yet with flexibility, makes HUD unique among Federal agencies.

PUBLIC HOUSING COMPLIANCE REVIEWS

Question: A March 3rd memo my staff received indicated that there were approximately 114 Title VI cases under review by the headquarters staff. Eighty three (83) reviews were initiated in fiscal 1986, 81 in fiscal 1987, and 80 were planned for fiscal 1988. How many do you plan to initiate in fiscal year 1989?

Answer: In fiscal year 1989, we plan to initiate 80 Title VI compliance reviews.

Question: The Department completed 87 reviews in fiscal year 1987. How many do you plan to complete in fiscal 1988 and 1989?

Answer: In fiscal years 1988 and 1989, we plan to complete a total of 160 compliance reviews, 80 in each fiscal year.

COMPUTER SYSTEM FOR COMPLIANCE REVIEWS

Question: A new computer system has been initiated which should decrease the time it takes to carry out an investigation. By what percent will this system decrease the average length of time for an investigation?

Answer: The compliance determination phase of our new computer system will not be operational until the early part of fiscal year 1989. At this point, it is premature to estimate the percent this system will decrease the average length of time for an investigation. The investigation phase of the compliance process is usually completed over a 2-year cycle, depending on when a review is begun. We expect to have hard data on the new computer system's impact on the investigation time by late 1990 or early 1991.

Question: Is the computer system currently operative? [If not] when will it be?

Answer: The compliance determination phase of the system is not currently operative. We will phase in the system during fiscal year 1989.

COST OF MAINTAINING COMPUTER SYSTEM

Question: What was the total cost of implementing the system and what additional costs will you incur annually to operate and maintain the system?

Answer: We estimate the cost of implementing the compliance determination phase will be approximately $348,000. The system will be phased in during in fiscal year 1989. Estimated costs for operating and maintaining the system will be approximately $145,000 per year. We are confident the savings in productivity and the enhanced analytical capability we gain will substantially surpass the small cost of this system phase. Without it, our ability to investigate large PHAs and to monitor their performance under the compliance agreement would be significantly diminished.

PROMPT PAYMENT OF CLAIMS

Question: The Prompt Payment Act encourages agencies to pay their bills on time. It does this by requiring the government to pay interest on overdue bills. It is my understanding that HUD has one of the highest payment delinquency percentages. According to the 1987 status report submitted to Congress by the Office of Management and Budget, HUD paid $66,000 worth of interest on 3,717 late payments.

Why is HUD's record in this area so poor?

Answer: HUD did pay $66,000 of interest penalties in 1987 which represented .03 percent of the total dollar amount of payments subject to Prompt Pay. However, the amount of interest penalty occurred during the initial implementation of a fully automated system at our largest payment center. The system enhancements have increased our ability to process vouchers accurately, to closely monitor the performance of our Field Offices, and to more accurately report on Prompt Pay Act compliance. Using this system in the last 6 months of fiscal year 1987, we successfully reduced the amount of interest penalty paid by 66 percent. We now feel confident that our prior problems have been brought under control, and that the interest penalties paid will continue to decline.

Question: What steps are being taken to correct the problem?

Answer: In fiscal year 1988, we continued to make automated improvements at our other payment centers. We also provided procedural guidance and on-going training for our Regional and Headquarters staff. We have also implemented monitoring systems in all our payment centers.

Question: Do you have any goals or timetables to effectively reduce the amount of money being spent on interest due to late payments?

Answer: Our goal is to process all payments in accordance with the Act. We are issuing an Agency Policy Statement which we feel certain will assist us in the achievement of this goal.

ASSISTED HOUSING - ADMINISTRATIVE FEES

Question: As I understand it, your budget request assumes that an administrative fee of 7.65 percent will be paid on both vouchers and certificates rather than the 8.2 percent fee authorized by Section 144 of the Housing and Community Development Act of 1987. Is that correct?

Answer: Yes, the 7.65 percent fee has been proposed for both vouchers and certificates for fiscal year 1989.

Question: If the authorized 8.2 percent administrative fee were to be paid in fiscal year 1989 how much would we have to add to your budget request to get the same number of units or, in the alternative, how many units would we lose if we provided your budget requests?

Answer: If the 8.2 percent fee were to be paid in fiscal year 1989, and additional cost of $59.4 million is estimated, based on 956,181 certificates and vouchers under payment at the end of fiscal year 1987 and an additional 131,266 certificate and voucher units estimated by the end of fiscal year 1989.

However, the $59.4 million represents the additional cost for only fiscal year 1989 and does not reflect incremental costs of the fee increase (currently budgeted at 7.65 percent) for the full term of contracts entered into under the Certificate and Voucher programs. Assuming that certificates and vouchers currently under payment would require, on average, at least 5 years of budget authority through the end of the contract term and that new voucher reservations in 1989 would also be for a 5-year contract term, a total of $297 million of additional budget authority ($59.4 million x 5 years) would be required to maintain the same number of unit reservations proposed for fiscal year 1989.

If the budget request level of $6,886.8 million was provided and the 8.2 percent fee was implemented in 1989, an estimated loss of 11,015 voucher reservations would result from the 111,116 in the 1989 Budget to 100,101 voucher reservations.

VOUCHERS AND CERTIFICATES

Question: Secretary Pierce, it seems to me on the basis of simple logic that the voucher program is bound to cost more than the certificate program. I know that logic and politics don't always mix, but let me spell this out for you.

Under the certificate program, the government pays the difference between 30 percent of a family's income and the actual rent, which cannot exceed the established Fair Market Rent (FMR) for that area. Thus if the FMR was $400 but the tenant paid an actual rent of $390 the government would pay the difference between 30 percent of the tenant's income and $390.

Under the voucher program the government would always pay the difference between 30 percent of a tenant's income and the FMR.

Thus in the above example the government would pay the difference between 30 percent of the tenant's income and the $400 FMR, even though the actual rent was only $390.

If the government always pay the FMR under the voucher program but sometimes pays less than the FMR under the certificate program, doesn't it logically follow that certificates will be cheaper than vouchers?

Answer: Under the suggested scenario, where the gross rent is less than the fair market rent/payment standard and family incomes in the two programs are identical, the housing voucher would be more expensive in the first year as illustrated in the following table:

	Certificate	Voucher
Fair Market Rent/Payment Standard	$400	$400
Gross Rent	$390	$390
30 percent of Family Income	$175	$175
Family Share of Rent	$175	$165
Housing Assistance Payment	$215	$225

This is a result of the shopping incentive under the Voucher program whereby if the unit rents for less than the payment standard, the family benefits by paying less than 30 percent of their adjusted income. However, this scenario assumes that rents and incomes remain at the same levels over the term of the contract. These variables are likely to change from year-to-year which may result in dramatically different costs between the programs than those under the suggested scenario.

Therefore, a number of factors should be taken into account when comparing the costs of vouchers to certificates including the timing of annual adjustments in relation to fair market rents, uncertain rates of increase of fair market rents and payment standards, and the ability of PHAs to approve higher "exception rents" under the Certificate program.

The following table reflects a potential cost comparison scenario for year 2 and the effect of automatic annual adjustments on rents under the Certificate program. This table assumes that the payment standard, the fair market rent, and family income have not changed from the levels in the previous table at the time the lease is renewed. However, the gross rent has been adjusted with an increase of 5 percent.

	Certificate	Voucher
Fair Market Rent/Payment Standard	$400	$400
Gross Rent	$410	$410
30 percent of Family Income	$175	$175
Family Share of Rent	$175	$185
Housing Assistance Payment	$235	$225

The HUD subsidy under the Certificate program is $10 higher than the subsidy under the Voucher program as tenants are limited to paying 30 percent of income. However, under the Voucher program, tenants must pay out of pocket, in addition to 30 percent of income, that portion of rent which is greater than the payment standard. PHAs may make adjustments to the payment standard, but this is at the option of the PHA.

The use of exception rents for high cost neighborhoods in the Certificate program should also be factored into the voucher/certificate cost comparison. Local housing agencies are allowed to approve exception rents up to 110 percent of the fair market rents for 20 percent of the units in its Certificate program. With HUD approval, the percent of units may be increased.

In the Certificate program, families are indirectly encouraged to seek the best housing possible. Regardless of the quality or cost of the family's housing choice, the family will always pay 30 percent of income which is $175. In the housing Voucher program, the family pays $175 if it rents a unit at the payment standard; pays less than $175 of the family selects a less expense unit; and more than $175 for a higher cost unit. The following table reflects the impact of exception rents on the subsidy costs for vouchers and certificates. The fair market rent, payment standard, and family income rents remains the same as in previous examples.

	Certificate	Voucher
Fair Market Rent/Payment Standard	$400	$400
Gross Rent (exception rent)	$440	$440
30 percent of Family Income	$175	$175
Family Share of Rent	$175	$215
Housing Assistance Payment	$265	$225

In this case, the certificate cost $40 more than the housing voucher. The housing voucher family, on the other hand, has to decide whether it can afford to pay $215 out-of-pocket or look for a less expensive unit. Since most PHAs use all of their exception rent authority, the Certificate Program could cost more than the Housing Voucher program.

Based on the variability of these factors, it is difficult to conclude that one program costs more than the other as the cost differentials found in 1 year might not continue over a multi-year period.

DECONTROLLING OF PHAS

Question: According to a recent new release issued by HUD you are working to decontrol public housing agencies (PHAs). As part of this effort HUD staff, along with the public housing industry, developed a Decontrol Handbook that was issued last October. The handbook relieves well-managed PHAs or "Recognized Performers" of many burdensome requirements, and defines standards to measure a PHA's performance.

I am concerned that PHAs, once they achieve a "Recognized Performer" status, will not be monitored adequately and their standards will fall. What control mechanisms will be used for PHAs deemed as "Recognized Performers" to ensure that they don't backslide.

Answer: We believe that our Decontrol Handbook provides sufficient safeguards against "backsliding" by PHAs with Recognized Performer status.

In the initial determination of whether a PHA qualifies as a Recognized Performer, HUD must verify the PHA's certification that it satisfies all seven Performance Standards. Verification is based on current financial statements, reports and any other available information. If the PHA did not, in fact, meet one or more of the Performance Standards, then it would be ineligible for decontrol. Even if the PHA met all seven standards, but had serious problems in particular areas, HUD could except the problem areas from decontrol.

Similarly, after the PHA's status as a Recognized Performer is verified, controls may by reinstated in any area in which serious problems arise. If pervasive problems are found at any time, HUD many rescind the PHA's Recognized Performer status.

After the initial HUD verification of Recognized Performer status, the PHA must recertify annually and each annual recertification is subject to reverification by HUD.

While the seven Performance Standards are key indicators, rather than detailed tests for all PHA activities, the industry consensus is that they are a sound proxy for good, overall management performance. Subject to the safeguards for exceptions, the Department and the industry groups concluded that, if a PHA has serious management problems of any type, they will probably be reflected in one or more of the seven Performance Standards.

Decontrol does not mean that a Recognized Performer is relieved from compliance with the provisions of Federal law and regulations. Relief goes to certain reporting and review requirements and not to substantive program requirements. Compliance with substantive requirements will still be monitored, but by less frequent reviews or by post-audit rather than prior review.

Relief for Recognized Performers does not apply to Fair Housing/Equal Opportunity reviews, on-site modernization program reviews, Inspector General audits and investigations, or PHA responsibilities for obtaining regular audits by an independent auditor.

The degree of decontrol is limited to specified areas of relief. Although a substantial advance in the direction of greater local responsibility, the Department believes that the limitations are well within the bounds of prudence, as a first step. Through experience and continued consultation with PHAs, we hope to identify more areas of relief which can be justified, consistent with essential monitoring safeguards.

SINGLE FAMILY PROPERTY INVENTORY

Question: What is the total daily cost of maintaining a single unit in the HUD inventory of FHA-foreclosed Single-family properties? Include all expenses related to the property such as maintenance, state and local taxes, insurance and other attributable costs.

Answer: The total daily cost of maintaining a single property in the HUD inventory of FHA-foreclosed single-family properties averages $14. This includes opportunity cost (income from sales foregone), maintenance and operating costs, taxes, and salaries for HUD property disposition staff located in the Field and Headquarters.

Question: What is the total yearly cost of maintaining a single unit in the HUD inventory of FHA-foreclosed single-family properties?

Answer: The total yearly cost of maintaining a single property in the inventory is estimated at $5,110. This amount includes opportunity cost and salaries of property disposition staff.

UNITS IN INVENTORY

Question: How many units were in the inventory at the end of 1984, 1985, 1986, 1987, and currently?

Answer: The information follows:

Fiscal Year	# of Units
1984	20,081
1985	27,485
1986	45,561
1987	47,648
as of 3/31/88	58,877

SINGLE FAMILY PROPERTY DISPOSITION

Question: What was the total yearly cost of maintaining the HUD inventory of FHA-foreclosed single-family properties in 1984, 1985, 1986, 1987, and the projection for 1988?

Answer: The cost of maintaining the single family property inventory from 1984 to 1987 and the most current estimate for 1988 is listed below. The numbers exclude opportunity costs and salaries of HUD property disposition staff.

Fiscal Year	Amount (in thousands)
1984	$43,231
1985	32,412
1986	39,334
1987	65,460
1988 Estimate	137,200

COST OF INVENTORY

Question: If sales of properties in the inventory increased (and everything else was held constant) would the cost of maintaining the inventory drop?

Answer: Yes, the total cost of maintaining the inventory would drop because there would be fewer properties to maintain. The average cost per property, however, could change depending on which properties were sold.

SINGLE FAMILY PROPERTY DISPOSITION

Question: Would an increase in the Urban Homesteading budget (that allowed additional purchases from the inventory) be reflected in a budgetary offset that reflected a drop in the cost of maintaining the inventory? If not, why not? If so, how much and to what account in the budget?

Answer: If the increase in the Urban Homesteading budget were used to reimburse the FHA Fund for properties transferred to the Urban Homesteading program, the FHA inventory would decrease, and therefore the total cost of maintaining it would also decrease. This would be reflected as decreased maintenance costs in the FHA Fund.

RELATIVE COST OF VOUCHERS vs. CERTIFICATES

The GAO and the Abt studies you and other Senators referenced should not be used to judge the cost of housing vouchers. The Abt study dealt only with the first year of the demonstration program and the GAO study was flawed.

The GAO study was flawed on two counts. First, it did not provide for the use of exception rents for 20 percent of the units under the Certificate Program and thus under-stated certificate costs. Exception rents are not authorized for use in the Housing Voucher Program. Second, it assumed that subsidy costs would increase by the same fixed percentage each year, and thus over-stated voucher costs. Under the Housing Voucher Program, annual subsidy adjustments are not automatic as in the Certificate Program but are left to the discretion of the PHA.

The Department never claimed that housing vouchers would be less expensive than certificates. We stated that housing vouchers would be less costly than new construction or substantial rehabilitation programs and that housing vouchers and certificates, over the long run, would cost about the same.

QUESTIONS SUBMITTED BY SENATOR LEAHY

SECTION 202 PROJECT--BURLINGTON, VERMONT

Question: In FY 1987, HUD rejected a Section "202" proposal to build 41 units of housing for the elderly and handicapped submitted by the Cathedral Square Corporation, a non-profit organization based in Burlington, Vermont. This rejection was made on the grounds that the preliminary schematic drawings for the 22,000 square foot housing complex exceeded HUD Cost Containment guidelines--by 100 square feet! It is my understanding that in FY 1987, HUD obligated only a small percentage of the funds it had available for the "202" program for the States of Vermont, New Hampshire and Maine. Is this correct? If it is, then how can the Department justify rejecting the $1.8 million Cathedral Square application for a minor, preliminary design flaw that could have been corrected, literally, within minutes? Isn't it HUD's policy to work with applicants to correct minor flaws in proposals? Does HUD really want to obligate these funds and operate this program according to Congressional intent?

Answer: HUD rejected a Section 202 proposal submitted by the Cathedral Square Corporation, a non-profit organization based in Burlington, Vermont. The organization proposed to construct a 41-unit project for the elderly and handicapped. The application was rejected by our Manchester Office because the square footage was in excess of our maximum allowable limits.

In conducting a national competition for funds, we have developed requirements over a number of years that have proven a highly useful way to evaluate a large number of proposals in the short period of time that is usually available for our Field Office reviews. In attempting to be fair to all applicants, we establish threshold requirements and use them as a baseline to determine whether applications should undergo complex, time-consuming and costly additional reviews.

In each Section 202 competition there are cases, like that of Cathedral Square, in which an otherwise promising applicant fails to meet our published requirements. In those cases, and in order to be consistent and fair to all applicants, we reject the applications. In our view, it would be unfair to hold some applications to the threshold requirement and not others.

In fiscal year 1987, Region I (which includes Massachusetts, Connecticut, Maine, Vermont, New Hampshire and Rhode Island) received a lower number of applications than in any previous year. The lack of activity on the part of prospective applicants is the reason that funds were returned to Headquarters for reallocation among other Offices.

The lack of activity in one fiscal year in a particular Regional Office does not constitute a valid reason to alter the requirements in that region when applicants throughout the rest of the country are held to published requirements.

HUD does work with applicants at the proposal stage by scheduling workshops for prospective applicants in each of our Offices. The Offices provide all persons who have expressed an interest in the program, over a several year period, an invitation to a workshop. During the workshops, program requirements are discussed and representatives from each of our technical disciplines review pertinent threshold requirements. Further, a package of information containing the necessary exhibits which constitute a Section 202 application are made available to each participant.

However, once the applications are submitted, we do not permit changes or corrections, other than permitting applicants to submit up to two missing exhibits. After the selection process, we work extensively all through the development phase with selected sponsors and their development teams.

SECRETARY'S DISCRETIONARY FUND

Question: In the FY 1988 Continuing Resolution, Congressional language earmarked $6 million of the HUD Secretary's Discretionary Fund for "special projects and technical assistance." Can you tell me what the Department is doing to implement this directive? What specific special projects and technical assistance contracts is HUD funding, or about to fund, with this $6 million?

Answer: The Department intends to comply with the directive regarding the special projects; however, we have been directed by OMB to consult with them prior to final commitment. The four projects and their status is as follows:

Brookhaven, NY, Water Project.................	$3,000,000	- Awaiting Application
Rhode Island Marathon House...................	1,000,000	- Awaiting Application
New York Institute of Technology..............	150,000	- Awaiting Application
Charleston, MS...........	500,000	- Application under Review
Total.................	4,650,000	

With regard to the additional $1.35 million provided for technical assistance, this amount has been more than offset by Section 522 of the Housing and Community Development Act of 1987 which requires the Department to provide $5 million from the 1988 Secretary's Discretionary Fund for the Park Central New Community. The Committee was previously advised of this proposal when the Department responded to the Appropriations Conference Committee request for 1988 Operating Plans.

COMMUNITY DEVELOPMENT BLOCK GRANTS

Question: Since 1980, the Community Development Block Grant program has been cut by almost 50%, in real terms. Given the general support of the Administration over the years for block grants that give more funds and decision-making power to States, why is the President proposing a further 15% cut in the CDBG program? Most cities and states have long backlogs of worthy projects that are eligible for funding under the well-targeted CDBG program. How does the Department propose that these projects benefitting low income people be funded if the further cuts proposed by the President are implemented?

Answer: The $2,625 million level proposed for fiscal year 1989 is the same level we proposed for this program for fiscal year 1987 and fiscal year 1988. The Congress has provided additional funding over our request for those 2 years. While the Administration does support this program, the $2,625 million funding level is appropriate to meet the objective of the Balanced Budget and Emergency Deficit Control Act of 1985. While many activities that the Federal Government has funded in the past could be considered "worthy," the large budget deficit prohibits us from funding all but the most critical community development needs. We believe that our fiscal year 1989 request strikes a fair balance between budget realities and community development needs of our localities and States.

FUNDING VOUCHER RENEWALS

Question: Over the past four years, the Administration has shifted its emphasis from providing low income households with Section 8 Certificates, which have a 15-year contract term, to Vouchers, which have a 5-year term. Given the relative shortness of these 5-year terms, what is the Department's plan for funding the renewal of these Vouchers once they expire?

Answer: The Department plans to request funding for 5-year replacement vouchers. Having a 5-year rather than a 15-year term enables us to make far more accurate budget projections. Furthermore, the 5-year increments provide an opportunity to reassess overall housing needs and realign our funding priorities as necessary.

LOSS OF UNITS

Question: Over the next several years, thousands of apartments now assisted by HUD under the 236 and 221(d)(3) programs could be lost from the subsidized housing stock, if the private owners of these complexes are able to pre-pay their federal mortgages. Beyond the temporary solution written into the Housing and Community Development Act of 1987 by the Congress, is the Department developing a long term strategy for avoiding displacement of low income people and losses from the stock of assisted housing? Does the Department have a comprehensive listing of the projects that could be pre-paid over the next five years, and a preliminary cost estimate of saving these assisted units, or providing replacement housing? Is addressing this situation creatively a high priority? Have any funds from the Secretary's Discretionary Fund been obligated as seed money, or to purchase technical assistance, toward the goal of addressing this growing problem?

Answer: Of the 604,460 units in the HUD-insured and HUD-held portfolio covered under the program identified in this question, 74.5 percent or 444,291 of the units either cannot prepay because of regulations or are located in areas where the owner will not prepay because there is no other use for the property other than to provide low-and moderate-income housing. In addition, out of the 25.5 percent or 154,279 of the units that are possibilities for prepayment, 70,022 of these units, representing 11.58 percent of the universe, have some negative attributes which make prepayment speculative for the owners. On a case-by-case basis, depending on the need to preserve the housing, HUD can offer some inducements which might preserve a good portion of them. This leaves 13.9 percent or 84,257 of the units that will likely prepay because it would not be cost beneficial to the Federal Government to offer inducements large enough to preserve the units.

HUD is committed to working with State and local agencies in developing a plan that will minimize the loss of units. In addition, HUD will provide all eligible tenants assisted in the project with a voucher so that they have assistance after the project is prepaid. We estimate that 6,155 vouchers (representing about $149 million of budget authority) will be needed for 1989 for opt-out and prepayment purposes.

HUD has a listing which indicates when each project is eligible to prepay. We also maintain a "picture-in-time" (June 30, 1987) of the project, its tenant make-up, the family size, etc. We are automating much of this information and will, upon implementation in the 2nd quarter of fiscal year 1989, be able to update on a project-by-project basis for the year the project becomes eligible to prepay.

HUD has worked with various task forces who are preparing reports and recommendations and will review and analyze the findings and pursue implementation of the recommendations.

No Secretary Discretionary funds have been committed or used to deal with this issue. The Office of General Counsel has reviewed the possible use of the Secretary's Discretionaly Fund for this purpose. Any proposal to "purchase technical assistance" would require a linkage between the technical assistance and the Community Development Block Grant program or UDAG project of the community where such assistance is to be provided. That linkage is not present with respect to this issue.

MORTGAGE REVENUE BONDS

Question: Over the years, proceeds from Mortgage Revenue Bonds have enabled almost 11,000 Vermont families to obtain low cost, flexible mortgage financing. What is the Department's position on S. 1522, a bill to extend the authorization for issuing Mortgage Revenue Bonds, which is co-sponsored by more than 60 Senators, including 13 members of the Senate Finance Committee? If the Department opposes this legislation, on what grounds? What are the alternatives to Mortgage Revenue Bonds for meeting the needs of prospective first time home buyers?

Answer: The Department opposes continuation of the program. GAO's recent evaluation of the program concludes that two-thirds of homebuyers assisted by Mortgage Revenue Bonds (MRB) could have bought the same house at the same time without benefit of tax subsidies; the other one-third could have bought a smaller less expensive home. In other words, the tax subsidy made possible by State issuance of tax exempt MRB's accomplished a "substitution effect" (in place of conventional or FHA taxable financing) rather than expansion of first-time homeownership.

If the GAO report is correct, the MRB market could have been served by FHA or VA low downpayment loans. Bond proceeds are normally channeled through Savings and Loans as originator/servicers. Mortgage insurance where used (for loan to value rates above 80 percent) has been overwhelmingly private, rather than FHA/VA.

If Congress favors an alternative subsidy, it could retain the Mortgage Credit Certificate (MCC) provision of the MRB program. MCCs provide an off-set to an eligible homebuyer's tax liability and avoid the cost of issuing tax exempt bonds.

QUESTIONS SUBMITTED BY SENATOR LAUTENBERG

RENTAL HOUSING DEVELOPMENT GRANTS

Question: The Administration's FY '89 budget did not propose any funding for Housing Development Grants, even though the 1987 Housing and Community Development Act authorized the program through FY '89. What has been HUD's experience with the HoDAG program?

Answer: As of March 31, 1988, HoDAG has 266 grants in 187 cities. Almost $490 million has been obligated to develop 24,200 units with 7,048 (29 percent) of these set aside for lower income households. Construction has started on approximately 146 projects with 7,090 completed units and more than 6,000 occupied units.

The first round of HoDAG funding produced 14,462 units, of which 3,769, or 26 percent, were lower income units. The average cost to support a lower income unit was $76,670. In contrast, by round three, the percentage of lower income units increased to 36 percent, and the average cost of supporting a lower income unit dropped to $55,126. In spite of these improvements, due to better targetting, this program continues to represent a very expensive way to provide assisted housing.

Question: Has the program been effective in meeting its objectives?

Answer: This program is designed to provide States, cities and urban counties with grants for new construction and substantial rehabilitation of real property for rental purposes. The program is limited to areas experiencing a severe shortage of decent rental housing for families without other reasonable housing alternatives. At least 20 percent of the units must be occupied or available for occupancy by low-income families.

Although the targetting of the program to areas experiencing a shortage of rental housing has improved, the cost of providing a low-income housing unit has remained at over $70,000 per unit, significantly more costly than other assisted housing programs such as the Housing Voucher program. It is this high cost that makes the program prohibitive in meeting low-income housing needs. As for meeting rental housing needs in general, there are other programs such as the Rental Rehabilitation program and the proposed new construction component of the Block Grant which can be utilized along with local efforts.

Congress has recognized that the HoDAG program has not proven to be an effective means of providing assisted housing. The Housing and Community Development Act of 1987 (P.L. 100-242) has terminated the program effective October 1, 1989.

Question: What plans do you have for the funds that will be recaptured?

Answer: The 1988 Appropriations Act (P.L. 100-202) authorized the use of unobligated balances and recaptured authority. Therefore, recaptured funds will be used to fund projects which were not funded in fiscal year 1987. These projects will be funded to the extent recaptures become available and in the order in which they ranked in 1987.

CDBG DISTRICT HEATING AND COOLING

Question: Last year, both the House and Senate Appropriations Committees instructed the Department to continue its district heating and cooling program at a level of no less than $400,000. Could you describe what activities the Department has undertaken to encourage development of this important energy infrastructure in FY 1988 and what plans you have for FY 1989? Specifically, do you plan to award additional planning and development grants to cities currently pursuing district heating/cooling projects?

Answer: During fiscal year 1988, HUD will award assistance agreements to four or possibly five cities to conduct the final stages of design and development of district heating and cooling systems. This involves the final design, marketing, ownership structuring, and financial packaging of a system of community energy infrastructure. These awards will be made through a competitive process which begins in May. Cities that have recently completed district heating and cooling feasibility studies will be eligible to compete under this RFP. The cities are asked to assure that the energy infrastructure is designed with concern for how it can serve as the base for further economic development tied to the enhanced energy efficiency the city will obtain from the system.

During fiscal year 1988, the Department has continued its work on waste to energy system technical assistance. We have sent teams of experts to Kansas City, MO; Knoxville, TN; Auburn, NY; and Erie, PA to review and make recommendations to the cities' leaders on the opportunities for district heating using municipal trash-burning to provide the source of heat. These recommendations provide local officials an unbiased and expert "second opinion" on multi-million dollar investment decisions with which they are faced.

With regard to fiscal year 1989, we await the enactment of appropriations.

PRESERVATION OF HOUSING INVENTORY

Question: In coming years, the supply of federally assisted housing may be reduced substantially as the subsidies for hundreds of thousands of units expire. This would mean either substantial increases in housing costs or eviction for a very large number of tenants. What are you doing to address this problem?

Answer: Between 1989 and the year 2000, we estimate that the subsidies for 2.8 million assisted housing units will expire. It is our intent to renew all of these contracts, beginning in 1989, using housing vouchers. While this will cost an additional $115 billion between now and the year 2000, these amounts have been built into the budget estimates for the out years because this alternative is far more acceptable than forcing the eviction of millions of tenants currently residing in assisted housing.

ADMINISTRATIVE FEES

Question: The Housing and Community Development Act of 1987 set a uniform administrative fee for both Section 8 certificates and vouchers of 8.2 percent of the two bedroom Fair Market Rent. Does the Department's FY 89 budget submission include that fee in its request for Section 8 vouchers? If not, why not?

Answer: The Department's fiscal year 1989 Budget does not reflect the implementation of the 8.2 percent fee. The Housing and Community Development Act of 1987 authorized the 8.2 percent fee to the extent amounts for the increase are provided in appropriation Acts.

An appropriation to fund the 8.2 percent fee was not provided by Congress and as a result the fee change will not be implemented in fiscal year 1988.

The Department's fiscal year 1989 Budget proposes a uniform fee of 7.65 percent for the Voucher and Certificate programs. The Department finds that this fee level is more than sufficient to support Public Housing Authority (PHA) administration of the program. A recent GAO report found that the current fee level for the Certificate program resulted in fees being paid in excess of the costs of administering the program for most of the 70 PHAs surveyed.

With current information not supporting the 8.2 percent fee and with the results of the Voucher Demonstration study on fees pending, it would appear that not implementing a significant increase would be a prudent course of action for fiscal year 1989.

Question: How much additional money is needed to implement the 8.2 percent fee for the 100,000 vouchers proposed by the Department? Will the Department be asking for this amount this year?

Answer: Assuming fees are raised from the current administrative proposal of 7.65 percent up to 8.2 percent beginning in fiscal year 1989, an additional $20.5 million in budget authority would be required to support 100,000 new vouchers over the 5-year contract term.

However, this is not the only cost impact involved with such an increase. The fee increase also would affect the more than 1 million certificates and vouchers already under contract by increasing fee expenses by an additional $220 million over the comparable 5-year period.

The combined 5-year cost impact--almost one quarter of a billion dollars--would be an extremely ineffective use of scarce Federal dollars since all available studies, including a GAO review, indicate that the 7.65 percent level is more than sufficient reimbursement to PHAs for the amount of work required.

PHA CERTIFICATE FEES

Question: From 1974 until 1985, the administrative fee allowed local public housing authorities for administering the Section 8 program was 8.5 percent of the two bedroom Fair Market rent. In January 1985 HUD administratively reduced the certificate fee to 7.65 percent. Why was this change made?

Was there a change made in the formula used to calculate the total per unit amount available to public housing authorities for the program (both program subsidy costs and administrative fees) following the reduction of the fee to 7.65 percent? If so, when was that change made and what was its justification?

Which HUD Office made the formula change and how were local housing authorities notified of the change? Please provide a copy of any notice to the Field for the record.

If the formula was not changed, is it not true that funds committed in prior years for Section 8 certificates remain available to pay the authorized fee of 8.2 percent?

Answer: This 10 percent cut in PHA fees was part of an overall reduction in administrative expenses in the fiscal year 1986 Budget. The decision to include the PHA fees in this reduction was an exercise in belt-tightening as well as an effort to bring certificate fees more in line with actual expenses. There was a 10 percent reduction in the preliminary start-up fee and a 10 percent cut in the ongoing administrative fee. The HUD subsidy costs were not affected by this cut. The new fees were to be reflected in the PHA's submission for any fiscal year that began on or after July 1, 1985. This change was made by the Office of Housing and was reflected in the Housing Handbook Transmittal No. 7420.7 CHG-4 dated 3-13-85. This transmittal was sent to local housing authorities.

Administrative fees are paid from available funds in the reserve accounts which are also used to pay for subsidy increases due to increases in rents. Due to rent increases and tenant income definition changes pursuant to the Housing and Urban-Rural Recovery Act of 1983 (P.L. 98-181), reserve accounts were tapped for additional resources. The implementation of the 8.2 percent fee would further deplete available resources in these reserve accounts.

U.S. Department of Housing and Urban Development
HOUSING

Special Attention of: Regional Administrators; Directors, Office of Regional Housing; Directors, Regional Accounting Divisions; Field Office Managers; Housing Development Division Directors; Housing Management Division Directors; Housing Programs Branch Chiefs; Assisted Housing Management Branch Chiefs, and Public Housing Agencies.

Transmittal Handbook No.: 7420.7, CHG-4

Issued: 3/13/85

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1. This Transmits:

   Changes and additions to the Public Housing Agency Administrative Practices Handbook for the Section 8 Existing Housing Program, Handbook 7420.7, dated November 1979.

2. Explanation of Material Transmitted:

   a. The forms used by Public Housing Agencies (PHAs) to submit the financial data for the Section 8 and Section 23 Housing Assistance Payments Programs (HAP) have been revised for use in the Housing Voucher Program. The revised forms must be used for all Section 8 Existing Housing Programs beginning with the next PHA fiscal year.

      Two of the seven financial forms were eliminated (Form HUD-52671 and Form HUD-52682). The information previously provided on these two forms is now included on Form HUD-52672, Supporting Data for Annual Contributions Estimates and Form HUD-52681, Voucher for Payment of Annual Contributions and Operating Statement. The following revised financial forms are transmitted:

      (1) Form HUD-52672, Supporting Data for Annual Contributions Estimates (Appendix 35-A)
      (2) Form HUD-52673, Estimate of Total Required Annual Contributions (Appendix 35-B)
      (3) Form HUD-52663, Requisition for Partial Payment of Annual Contributions (Appendix 36)
      (4) Form HUD-52681, Voucher for Payment of Annual Contributions and Operating Statement (Appendix 37)
      (5) Form HUD-52595, Balance Sheet for Section 8 and Public Housing (Appendix 38)

b. Chapters 8 and 12 are revised to reflect use of the revised financial documents. Changes to Chapter 8 also include the following:

(1) In response to an Office of Inspector General Audit on PHA administrative fees for the Section 8 Existing Housing Program, the original and one copy of the Form HUD-52681 now must be sent directly to the Field Office, Attention: AHMB, and a second copy (with a check, if applicable, from the PHA for any overpayment attached) sent to the Regional Accounting Division. The AHMB will forward the approved original form to the Regional Accounting Division. The purpose of this change in routing is to permit AHMB to ensure that the administrative fee has been calculated properly and to make any necessary modifications.

(2) As part of the government's efforts to reduce the Federal deficit, all PHA fees are reduced by 10 percent. The new fees must be reflected in the PHA's submission of Form HUD-52672 and Form HUD-52673 for any PHA fiscal year that begins on or after July 1, 1985. The following is a comparision of the old and new fees for the Section 8 Existing Housing Program:

	Old	New
Preliminary Fee	$275	$250
Ongoing Fee (Percent of 2-BR FMR)	8.5%	7.65%
Hard-To-House Fee	-$0-	$45

(3) Previously, PHAs received an ongoing administrative fee for the total number of units under ACC once HAP Contracts were executed, even if vacancies occurred, provided the PHA anticipated execution of replacement HAP Contracts sometime during the month. Now, PHAs are allowed an ongoing administrative fee for each unit under HAP Contract on the first day of each month regardless or whether a vacancy occurs during the month.

(4) A new hard-to-house fee of $45 is provided to cover the cost of special assistance given to families with three or more minors to enable them to find suitable housing. PHAs will receive $45 for each hard-to-house family that is actually housed (i.e., a lease and HAP Contract are executed) in a different unit than its pre-program unit. If an assisted family meeting the hard-to-house definition moves to another unit, the PHA will receive another $45 hard-to-house fee each time such a hard-to-house family moves with continued assistance. The fee is not provided for a hard-to-house family that remains in its pre-program unit.

CONGREGATE HOUSING SERVICES PROGRAM

Question: How would you evaluate the success of the Congregate Housing Services Program as a mechanism for preventing premature or unnecessary institutionalization of the elderly and handicapped?

A report by the House Select Committee on Aging concluded that "the CHSP stands as a model of service delivery that is progressive, cost-effective, and most of all humane." Do you agree? If not, why not? Do you have any suggestions for legislation changes to improve the program?

Do you think that the CHSP model for the integration of housing and services to older and disabled people could be usefully applied in other contexts?

Answer: The final evaluation report was sent to Congress in April 1986. It showed that the Congregate Housing Services Program (CHSP), as initially designed, was not cost-effective in enabling the elderly or nonelderly handicapped to live independently and prevent premature or unnecessary instituationalization. However, the report also stated that better targetting and tailoring of services to frail elderly and encouraging deinstitutionalization of those with minimal frailties to CHSP sites would make the program more efficient and effective. The Department has attempted to improve its targetting of this program with each succeeding fund allocation. However, the prevention of institutionalization continues to be a problem.

We have no legislative changes to recommend to improve the program. However, consideration might be given to allowing the service programs provided by other agencies to be provided for longer than one year at a time, thus allowing the long term planning for delivery of services permitted under the demonstration.

We are currently working on a project that considers options for service delivery to the frail elderly. The project will examine the potential of using the CHSP model in other contexts. Until that study is concluded this Fall, it would be premature to comment on the potential.

USE OF ADDITIONAL FUNDS

Question: I recognize that HUD's funding request was, of course, constrained by the Administration's view of the priority of housing and urban development programs in the context of the budget as a whole. However, if more money became available to the Department than that requested in the President's budget proposal, how would you prioritize the excess funds? Which programs would you fund first?

Answer: Because of the large annual budget deficit, we would not recommend any further appropriations for HUD in FY 1989. If funds become available they should be used to reduce this deficit first. If deficit considerations were not paramount and additional funds became available, top priority would be given to more vouchers.

1988 OPERATING SUBSIDY SHORTFALL

Question: Operating Subsidies for Public Housing have a shortfall of $23 million for FY '88. As a result, HUD is funding Public Housing Authorities at less than the amount for which they are eligible. Does the Department intend to request supplemental funding in the amount of $23 million so that these subsidies can be fully funded?

Answer: The Department does not plan to request a supplemental appropriation for fiscal year 1988 operating subsidies.

LITIGATION NEEDS

Question: How much money does the Department need to pay for acknowledged recapture claims during FY '88? How much to settle the lawsuit Committee for Fairness vs. Pierce? How much for the NAHRO/PHADA claims procedure?

Answer: Nine hundred and one PHAs have agreed, in connection with the NAHRO/PHADA claims procedure, to settle their initial claims of approximately $91 million for $39 million. Because of certain amounts which the settlement provides for crediting against the amounts HUD is to pay, the settlement would only require HUD to disburse approximately $28.8 million to these 901 PHAs. Another group of 38 PHAs has chosen to litigate their claims in Committee for Fairness vs. Pierce, No. 87-0324 (D.D.C.) in which their complaint sought $68 million 1/. These PHAs initially participated in the NAHRO/PHADA claims procedure, but they all ultimately decided not to settle on the terms accepted by the other PHAs. HUD is not prepared to settle with them on more generous terms.

1/ This amount includes claims for six PHAs which subsequently withdrew from the lawsuit after settling through the NAHRO/PHADA process.

URBAN HOMESTEADING PROGRAM

Question: How would you assess the success of the urban homesteading program?

Answer: I would assess the program as successful with respect to the two main program objectives: to provide homeownership opportunities for lower-income families and to help revitalize urban neighborhoods. Since the inception of the program, 10,463 federally owned properties have been conveyed to homesteaders. Cities that have continuous participation in the program report significant improvements in their homesteading neighborhoods. Further, a 1981 evaluation conducted by Urban Systems Research and Engineering of Cambridge, Massachusetts, concluded that "a focused cooperative effort can restore useful economic life to a property, help stabilize the surrounding area and, in effect, create value."

Question: How does the per unit cost of providing housing under this program compare with other housing programs?

Answer: The average acquisition cost per property in fiscal year 1987 was approximately $17,000. Figures on other programs are not available at this time.

Question: On average, how much does it cost to rehabilitate a unit of housing transferred under the program?

Answer: In fiscal year 1987, the average rehabilitation cost per property was approximately $23,000.

Question: What are the prospects for the program in the future?

Answer: There is less use of the program in those areas where there are few federally owned properties available at or below $25,000. Demand is steady in the mid-West bordering the Great Lakes Region. The demand is increasing for new programs in economically distressed areas of the country such as Texas, Oklahoma, and Louisiana where there is also a large inventory of federally owned properties.

Question: What obstacles does the program face?

Answer: We see no obstacles to the program.

MCKINNEY ACT PROGRAMS

Question: For the second consecutive year, organizations serving the needs of the homeless have been unable to utilize funding available through the Stewart B. McKinney Urgent Relief to the Homeless Act due to the short time frame allocated by HUD for program development.

For example, one sub-title, Permanent Housing for the Handicapped Homeless, was published in the Federal Register on February 16, 1988 with a closing date of March 31, 1988. Therefore, a potential project sponsor was allocated a mere six weeks to develop a proposal to include: identification of a facility; negotiation and settlement on purchase or lease plans; initiation of local planning and zoning compliances; locating sources of matching and operating/program funds; finalization of the proposal and fulfillment of in-State delivery time frames.

Due to the difficulty of accomplishing the necessary tasks in an unreasonable short period of time, sponsors are forced to submit proposals that are rushed, frequently incomplete and lacking cohesive thought. Consequently, the opportunity to obtain urgently needed funds for programs to aid homeless individuals throughout the nation is jeopardized.

My questions, Mr. Secretary, concern these time frames. Has HUD evaluated the extent of utilization of McKinney funds in 1987?

Answer: The McKinney Act was enacted in July 1987, and funding was appropriated shortly thereafter. HUD worked expeditiously to implement the programs under its jurisdiction, and funding awards were announced for all of the programs (except the Permanent Housing component of the Supportive Housing Demonstration program) by December 23, 1987. Because the funds were just recently awarded, HUD has not undertaken any special studies of fund utilization beyond our ongoing program monitoring efforts. However, HUD recently began a study which will examine trends in local funding, shelter, and service for homeless families and individuals and how the HUD-administered programs under the McKinney Act are being used. We are planning to complete a report by the spring of 1989.

Question: What was the quality of proposals submitted seeking funds?

Answer: The applications were of varying quality; there were both good and bad applications. HUD gave applicants who met the deadline, but who had deficient applications, additional time to correct deficiencies. We expect that the process of correcting deficiencies will be completed by early June.

Question: Has HUD received any feedback from organizations serving the homeless regarding the application time frames?

Answer: In establishing application deadlines, we established dates which we believed were achievable for applicants who were prepared to move quickly to use the available funding. We received more than enough quality applications for all of the programs except for the Permanent Housing for the Handicapped Homeless component of the Supportive Housing Demonstration program.

HUD published a notice announcing the availability of funds for permanent housing for handicapped homeless persons on February 16, 1988. HUD did not receive a sufficient number of applications by the March 31 deadline to use the entire $30 million available under the program. To identify key issues and problems at the State level which limited the submission of State applications for assistance for this program, HUD conducted a telephone survey of governor-appointed State coordinators. The short time frame for preparation and submission of applications was cited as a major problem, but it was only one of the problems identified. Other difficulties that were cited included identifying sites which met program criteria, making the required State matching contribution, limitations on provision of operating costs, and fulfilling program requirements regarding displacement, environmental review, project size, and the financial responsibility of private non-profit project sponsors.

Question: In the interest of obtaining the fullest participation by potential sponsors of housing and related services for the homeless, has HUD considered extending the time frames?

Answer: Because our survey indicated that the short application deadline was a major problem, HUD has encouraged continued efforts to develop applications. The Department has notified all States governors and the Mayor of the District of Columbia that they will have an opportunity to apply for the remaining funds following the review and selection of applications received before March 31, 1988. We are planning to publish a notice in the Federal Register soon which formally invites additional applications through August 30, 1988.

RADON

Question: Last year HUD told this Subcommittee it was developing a radon policy. Where is the policy? What actions have you taken to develop a policy?

Answer: The Department's radon policy is to deal with identified radon problem sites on a case-by-case basis. Examples of actions taken is assistance provided to the State of Florida on reclaimed phosphate lands; assistance provided to Butte-Anaconda, Montana, resulting in the use of public disclosure notices given to all prospective purchasers of existing housing seeking FHA insurance; and assistance provided to Edgemont, North Dakota, also resulting in the use of public disclosure notices.

At the request of the Housing Authority of Bethlehem, Pennsylvania, the Department, in conjunction with EPA, reviewed proposed radon mitigation measures for an existing public housing project. The technical advice provided has been reviewed by the Housing Authority which will implement a staged program of mitigation. The first phase of mitigation measures on 35 units of the 100-unit project is expected to commence shortly.

Question: The 1986 Superfund Amendments specifically requires HUD to work with EPA to conduct certain types of radon research. What have you accomplished under this provision? Have you reached an agreement with EPA on your responsibilities? What efforts have you made to reach an agreement with EPA to implement this section?

Answer: HUD and EPA have been coordinating their research efforts to ensure an effective and non-duplicative use of available funds. As part of its coordinating efforts, HUD and EPA have agreed that the Superfund Amendments clearly give EPA the lead responsibility for establishing a research program to deal with radon. HUD coordinates program delivery with EPA on a formal and informal basis. The roles of both agencies have been discussed at Interagency Committee on Indoor Air Quality (CIAQ) meetings and the HUD program delivery and coordination plan is included in the most recent EPA report, "Current Federal Indoor Air Quality Activities," published in March 1988.

Most recently HUD, in coordination with EPA, has initiated a project with the National Bureau of Standards on methods to determine the potential for radon at specific building sites. Work on this project are expected to start shortly.

Question: The 1949 Housing Act requires HUD to assist in production of housing of sound standards of livability. The GAO says this is of sufficient authority to support HUD radon actions. Do you agree?

Answer: The 1949 Housing Act sets forth a goal of a "decent home and suitable living environment . . . ." This broad mandate has been cited as the authority for establishing certain environmental regulations.

HUD notes that the General Accounting Office, in its report to Senator Frank R. Lautenberg, dated April 1988 and entitled "Indoor Radon: Limited Federal Response To Reduce Contamination in Housing," stated ". . . with the exception of the SARA research requirement that HUD shares with EPA, we found no statute requiring specific HUD action on radon." (GAO/RCED-88-103, B223233, April 1988, page 38) (emphasis added.)

A recent legal opinion from the Department's Office of General Counsel concerning HUD's responsibilities regarding radon was rendered on May 20, 1988. The legal opinion confirmed the statement in the GAO report as well as HUD's policy position that the Superfund legislation gave the lead responsibility for establishing a program with respect to radon gas and indoor air quality to EPA. The legal opinion stated that HUD attorney's "know of no other statute which requires HUD to act with respect to radon, e.g., to establish standards or guidelines, perform research, require testing, abatement of disclosure, or otherwise 'deal with' radon."

Therefore, without a specific Congressional mandate, HUD believes that its current efforts of working with EPA to implement the Superfund Amendments and providing assistance to communities on a case-by-case basis at the request of State and local governments is a proper Departmental policy. Without a specific Congressional mandate, HUD believes that it is potentially placing itself at risk of lawsuit or other action by affected parties if it were to broadly mandate unsubstantiated and costly actions without adequate scientific underpinnings and legal authority to make such actions supportable against legal action.

Question: Why hasn't HUD requested any appropriation for radon?

Answer: The Environmental Protection Agency and the Department of Energy (DOE) both have significant amounts of appropriations to deal with issues related to radon. In particular, the Department of Energy under the authority of the Mill Tailings Act, has no limit on the amount of funds it can allocate to deal with radon and related matters. At the present time, DOE has approximately $14,000,000 in its budget for radon activities.

In light of competing demands for limited HUD funds and in keeping with the President's desire to reduce the Federal deficit, the Department has not requested a specific allocation of funds for radon research but instead has relied on the extensive work already done and scheduled to be done by other Federal agencies charged with specific responsibilities in this area.

However, it should be noted that despite the high competing demands for HUD research funding, the Department is spending $40,000 in fiscal year 1988 funds from the Office of Policy Development and Research (PD&R) on research related to problem resolution of the effects of radon at specific sites. Additionally, HUD is providing $40,000 in CPD funds to support work on radon conducted by the Committee on Interagency Radiation Research and Policy Coordination.

In fiscal year 1989, the Department plans to make available approximately $100,000 in PD&R funds for radon related activities.

Question: EPA has set an action level of 4 picocuries per liter. The Park Service is working to get its housing down to that level. Homeowners across the country are doing the same thing. Is HUD saying it will not act until EPA establishes a standard?

Answer: DOE is currently in the process of conducting basic research on levels of radon exposure to miners and the public. Hopefully this information will supplement the data EPA originally used to develop its radon action level guidelines and resolve some of the controversy as to whether the EPA action level guidelines are appropriate. However, it is not just the establishment of an appropriate EPA standard that is needed. More important are methodologies for defining geographic areas where a standard would be applied, ensuring that testing devices are not tampered with or that test results are valid, and more definitive information on the costs and benefits of various mitigation techniques.

The Park Service currently includes a small number of housing units owned by the Federal Government and housing Park Service employees.

Question: GAO recommended that HUD incorporate and evaluate the effectiveness of radon mitigation techniques in new construction financed by HUD. In fact, HUD is incorporating mitigation measures in one apartment building in Bethlehem, Pennsylvania. Don't you think that in radon-prone areas like the Reading Prong, it makes sense to build in radon reduction measures, before the building is built? Don't you think that what's being learned in Bethlehem should be shared with EPA and other housing agencies?

Answer: HUD and EPA have worked together in providing technical assistance to the Housing Authority in Bethlehem, Pennsylvania on radon mitigation measures. However, it should be noted that consistent with HUD's long-standing policy, this advice and guidance was provided at the request of the Bethlehem Housing Authority and was site specific guidance dealing with mitigation measures for new construction. Prior to requesting HUD assistance, the Bethlehem Housing Authority had the site for a proposed 100 duplex two-story building tested for elevated radon levels. HUD believes that the testing of the site prior to construction saved money for the local housing authority in the long run.

The mitigation methods proposed for this project are incorporated into EPA's publication "Radon Reduction in New Construction." Copies of this publication have been sent to HUD's Regional and Field offices for staff and public dissemination.

Question: GAO says that HUD is proposing to sell seven houses it owns with radon levels "as is." HUD has a responsibility under the law to provide housing of sound construction and livability. Do you think its consistent with that duty to sell houses prone to causing cancer?

Answer: The Department discloses the potential effects of radon for properties located in areas which have been identified containing "elevated radon levels" through the use of Public Disclosure Notices. The use of Public Disclosure has been a long-standing policy of the Department in selling properties that it acquires through mortgage defaults and which have know deficiencies or defects.

In keeping with its policy of issuing Notices of Public Disclosure in Butte-Anaconda, Montana, HUD has authorized the sale of seven houses with a disclosure notice provided to the prospective purchaser. HUD is the only Federal agency which requires such Public Disclosure Notices. Presently, HUD has several inquiries from interested buyers for these seven homes.

Question: GAO says the law regarding liability for selling or financing homes contaminated with radon is unsettled. But, HUD could well be sued, to compensate for or to mitigate radon, in housing that it sells. Aren't you at all concerned about the financial risk HUD faces?

Answer: The Department is always concerned about risks to the insurance fund or any other program. To date, case law dealing with structural or other deficiencies does not support the assumption of undue risk to the fund. In a legal opinion prepared in 1982, HUD's Office of General Counsel provided an analysis of potential liability under the (1) National Housing Act, 12 U.S.C. Section 1701 et. seq.; (2) Federal Torts Claim Act, 28 U.S.C. Section 2671 et. seq.; and (3) National Environmental Protection Policy Act of 1969, as amended, 42 U.S.C. Section 4321 et. seq. The following briefly summarizes the content of that opinion:

National Housing Act. (12 U.S.C. 1701 et. seq.) "There is no legal relationship between the FHA and the individual mortgagor. Thus FHA appraisals do not give rise to a claim for breach of contract to a third party beneficiary theory; nor do they give rise to a negligence action, since Congress did not intend to establish a duty of care for the benefit of mortgagors when it enacted the National Housing Act."

Federal Torts Claim Act (28 U.S.C. Sections 2671-2680.) ". . . suits against the U.S. based upon misrepresentation, deceit, or interference with contract rights" are specifically exempted from coverage of the FTCA, 28 U.S.C. Section 2680(h). Furthermore, the U.S. Supreme Court has ruled that "misrepresentation" in the context of the FTCA, prevents suits against the U.S. based upon either negligent or intentional misrepresentation. U.S. v. Neustadt, supra, at 702.

National Environmental Policy Act of 1969, as amended. (42 U.S.C. Section 4321 et. seq.; 83 Stat. 852.) "NEPA is essentially a procedural statute and once the procedural requirements are met, an agency decision can be overturned only if it can be shown that it was 'arbitrary, capricious, and abuse of discretion or otherwise not in accordance with the law . . . .'

A court would look at whether an agency considered all relevant factors in reaching its decision and whether there has been a clear error of judgement. Under this standard of judicial review, however, a court does not substitute its judgement for that of an agency exercising reasonable administrative discretion."

The Department is also concerned that it is placing itself at risk if it attempts to limit the availability of FHA insurance or other HUD program funds without the benefit of detailed mapping or identification of supportable standards for determining areas of high radon concentration. For HUD to take a lead role without a Federal radon standard, adequate scientific underpinnings to support the action, and clear legal authority to act where elevated radon levels occur, could potentially subject the Department to needless and extensive exposure and liability.

Question: The GAO has suggested a number of specific actions HUD could take to address radon contamination. Will HUD implement any of these suggestions?

Answer: The GAO report contained one specific recommendation made to the Secretary of HUD. The report recommended that HUD and EPA define their respective roles and planned actions in response to the general requirements of SARA.

HUD and EPA have coordinated and defined their roles in dealing with radon using two interagency forums--the Interagency Committee on Indoor Air Quality and the Committee on Interagency Radiation Research and Policy Coordination. The HUD plan is included in the most recent GAO report, "Current Federal Indoor Air Quality Activities," dated March 1988.

Additionally, HUD staff are in regular contact with EPA and DOE officials regarding the status of planned and current radon activities and the research being undertaken as well as other related matters of mutual concern.

Question: The GAO report also documents a radon policy used in some Farmers Home Administration offices (pp. 43-44). Please provide HUD's views on each of these policies.

Answer: The Department does not believe that it is appropriate to speculate on the Farmers Home Administration (FmHA) guidelines until they are tested and the FmHA has experience in implementing them. To our knowledge, the FmHA's radon guidance was provided to two State offices--Florida and Idaho. The guidance material covers four areas: new or existing structures, transfers, inventory property, and construction of new buildings. The GAO has reported that the guidance has never been applied by two State FmHA offices. Both FmHA and State representatives have said they are not aware of any radon problems in FmHA properties.

For the record, HUD would welcome the sharing of any information that FmHA or State officials may have on the application of guidance materials, based upon their experiences to date. The more information we can share, the more we will learn about dealing with this naturally occurring phenomenon, radon.

QUESTIONS SUBMITTED BY SENATOR GARN

LEAD-BASED PAINT

Question: I would like to revisit an issue presented yesterday concerning lead-based paint in Public Housing. As you know, legislators often respond to publically glaring issues by requiring immediate action often before adequately identifying the extent of the problem at hand. Just recently, the President signed into law the Housing and Community Development Act of 1987 which greatly expands the effect of lead-based paint prevention requirements on Public Housing.

What suggestions did HUD provide to the Authorization Committee drafting Section 566 of the Act?

What is your determination of the extent to which Public Housing constructed or rehabilitated prior to 1978 presents hazards of lead-based paint exposure to children seven years old or younger?

Is this risk to exposure from lead-based paint greater than exposure from other sources of lead such as solder used for plumbing?

Answer: The Department opposed Section 566 of the Housing and Community Development Act of 1987. HUD completed a research study in July 1986 with Abt Associates which provided an estimate of the incidence and condition of lead-based paint in Public Housing units and common areas. The data shows lead-based paint based on a testing standard of 1.0 mg/cm2 in 69 percent of the sample units built in 1950 and before, 48 percent of units built between 1951 and 1959, and 41 percent of units built between 1960 and 1977.

Lead is a pervasive contaminant in the environment. There are multiple sources such as leaded dust in the air primarily from gasoline, paint chips and accessible chewable painted surfaces, drinking water, and glazed dishes. Much progress has been made by the Environmental Protection Agency (EPA) with respect to phasing out leaded gasoline and reducing air lead levels. The Food and Drug Administration and the Consumer Product Safety Commission have limited lead in food and various consumer products. EPA is addressing lead in water. Lead-based paint is the most common, remediable source of lead that causes symptomatic lead poisoning according to the Center for Disease Control statement of January 1985, "Preventing Lead Poisoning in Young Children."

Question: Concerns also have been raised that these statutory requirements are not only impossible to meet, but may require remedial action in cases where no real risk of exposure exists, and mandate removal actions which actually create or aggravate exposure.

What effect will the provision requiring inspection and abatement of all vacant dwelling prior to rerenting have on waiting lists for Public Housing?

How will implementation of these statutory requirements affect the Public Housing Modernization program?

Answer: The Department believes that the concerns about the statutory requirements are valid.

The unit turnover procedure can have the effect of delaying the rerenting of particular units (where no prior random testing has been done in a building) while testing and any necessary abatement is performed. This, of course, will mean subsequent delays for families with young children who are waiting for such units.

Expenditures for testing and abatement could significantly reduce the number of units and projects modernized as well as the rate with which the modernization proceeds.

Question: I questioned EPA at their appropriations hearing last week on this same issue and they knew nothing about the new legislation or HUD's role in implementing it. Why didn't you consult with EPA or CDC, both with the technical knowledge and experience in these areas, before publishing the proposed rule?

Answer: HUD staff has had substantial ongoing contact with the Environmental Protection Agency (EPA) and the Center for Disease Control (CDC) staff as well as with the National Institute of Building Science's Lead-Based Paint Task Force which is comprised of many of the leading experts in the nation on lead-based paint poisoning and its prevention. The Department will continue to consult with such experts as part of the demonstration program called for by Section 566 as well as to ensure the most efficient, effective, and safe testing and abatement program.

INTERAGENCY COUNCIL ON THE HOMELESS

Question: I would like to turn now to your role as Chairman of the Interagency Council on the Homeless. To what extent did the Council participate in OMB's review of other agencies homeless programs?

Answer: The Council did not directly participate in OMB's fiscal year 1989 Budget review activities. However, we expect the Council's work in assessing and evaluating the various homeless programs established under the McKinney Act to play an important role in assisting OMB in the budget review process in the future.

Member agencies of the Council, of course, discuss homeless program activities with OMB during the year.

Question: What recommendations can the Council give to Congress regarding changes to the McKinney Act that will streamline and improve upon homeless programs?

Answer: This is an issue that the Council will be considering as it develops the required annual report which will be submitted to the President and the Congress this fall. Since the McKinney Act was enacted less than a year ago, and agencies are just beginning to get experience operating the programs established under the Act, it would be premature to recommend cahnges at this time. The Council will be reviewing the McKinney Act programs over the next several months and assessing their impact on the capacity of States and local communities to tailor shelter and services for their specific homeless populations. As problems in implementing the programs are identified, we will work with the Congress and provider organizations to make any necessary changes to the McKinney Act programs.

FUNDING FOR HOMELESS

Question: In FY 1988, Congress appropriated more than $370 million to seven agencies for programs benefiting the homeless. The President, in his 1989 budget submission to Congress, proposed $390 million or an "increase of 4.3 percent over what Congress provided in FY 1988 for homeless programs overall." However, staff estimates indicate that the President's proposed FY 1989 funding levels for homeless programs are at least 13 percent below what Congress appropriated for FY 1988.

Based on your review of HUD's and other agencies' homeless initiatives, what specific programs and activities would the Council recommend funding if Congress appropriates $400 million in FY 1989?

Answer: The President's Budget for fiscal year 1989 requests funding for those programs for the homeless that we believe are most useful to States and local governments and charitable organizations as they work to alleviate the problems of the homeless in their communities. These include transitional housing; permanent housing for the mentally ill homeless (through the Section 202 program); FEMA's Emergency Food and Shelter program; substance abuse, mental health, health and community support services provided through HHS programs; and services for runaway and homeless youth and chronically mentally ill veterans. In addition to these efforts specifically targeted to the homeless, the President's Budget also supports continued funding of several block grant programs which recipients can use to assist homeless people.

Because the availability of Federal funds continues to be extremely limited, we cannot recommend that the Congress exceed the President's Budget request for programs to aid the homeless.

NONPROFIT SPONSOR ASSISTANCE

Question: I know that Senator Domenici already touched on the issue of housing for the homeless, mentally ill and the lack of participation in the transitional housing area, but I want to revisit the issue of participation in Section 202 as it relates to non-profit sponsor assistance.

In the FY 1988 Supplemental Appropriation, Congress provided a credit limitation of $960,000 for providing loans to non-profits to finance the start-up costs of Section 202 rehabilitation and construction projects.

In what ways is HUD using these funds to encourage rehabilitation and construction of housing for handicapped homeless persons?

How many loans were made?

What is the status of these projects?

Answer: The Department has not yet begun using Nonprofit Sponsor (Section 106(b) program) funds ($960,000) in fiscal year 1988 for start-up costs associated with Section 202 projects for the handicapped homeless because we have not yet received applications for such assistance. The deadline date for submission of fiscal year 1988 Section 202 applications is June 15, 1988. We expect to receive the bulk of our applications for 106(b) assistance at that time.

Beginning with our fiscal year 1988 Section 202 program, we instructed our Field Offices to include in their invitations for Section 202 applications, a statement expressing Congressional concern for the shelter needs of the homeless chronically mentally ill and to encourage sponsors serving this population to apply.

In the past, we have not targeted this program specifically to the homeless population. However, Section 106(b) funds have been used to assist many Section 202 sponsors in meeting their start-up expenses, including sponsors developing housing for the handicapped. For example, in our fiscal year 1987 program, of the 77 Section 106(b) loan applications approved for funding, 46 were proposals for the handicapped and 31 were for the elderly.

SECRETARY'S DISCRETIONARY FUND AND THE HOMELESS

Question: Have you considered devoting funds from the Secretary's Discretionary Fund, that is part of the Community Development Block Grant, for providing technical assistance to health officials involved in these homeless projects but lack the housing expertise to file acceptable Section 202 applications?

Answer: The Department may not use Secretary's Discretionary Funds to directly assist health officials in submitting Section 202 applications. Technical assistance from the Secretary's Discretionary Fund is limited by law for use by recipients in planning, administering, or implementing community development activities assisted under Title I of the Housing and Community Development Act of 1974, as amended.

As an option, however, local governments or States may elect to use a portion of the CDBG funds to provide technical assistance to health official in preparing Section 202 applications for projects that are deemed to be consistent with local community development strategies.

HOUSING VOUCHERS AS AN ALTERNATIVE TO SECTION 8 CERTIFICATES

Question: Secretary Pierce, you were questioned at length yesterday about the legitimacy of housing vouchers as an alternative to Section 8 certificates for providing housing assistance to our nation's low-income persons.

My fellow Senators cited GAO reports and the Abt report that all suggest vouchers are more expensive to administer and may lead to an increase in fair market rents.

Given the current budget constraints and climbing deficits, do you think vouchers will make housing more affordable for low-income persons while saving the Government money?

Answer: The GAO and the Abt studies you and other Senators referenced should not be used to judge the cost of housing vouchers. The Abt study dealt only with the first year of the demonstration program and the GAO study was flawed.

The GAO study was flawed on two counts. First, it did not provide for the use of exception rents for 20 percent of the units under the Certificate Program and thus under-stated certificate costs. Exception rents are not authorized for use in the Housing Voucher Program. Second, it assumed that subsidy costs would increase by the same fixed percentage each year, and thus over-stated voucher costs. Under the Housing Voucher Program, annual subsidy adjustments are not automatic as in the Certificate Program but are left to the discretion of the PHA.

The Department never claimed that housing vouchers would be less expensive than certificates. We stated that housing vouchers would be less costly than new construction or substantial rehabilitation programs and that housing vouchers and certificates, over the long run, would cost about the same.

Housing vouchers provide a greater choice to families in that they can choose how much of their income they will spend for housing--be it 30 percent of income, or more or less. Housing vouchers are not constrained by an arbitrary rent cap. Housing vouchers provide low-income families the same opportunities available to unassisted families.

Under housing vouchers, families are responsible for negotiating their own rents, rather than being subject to PHA intervention (PHAs may still counsel families on how to get the most housing for their money). Families also enjoy the right to shop for the "ideal" location, school, recreation, work, or family support. Under the Housing Voucher Program, families also benefit when they rent relatively inexpensive housing. Because of this, housing vouchers are considered less inflationary than certificates.

QUESTIONS SUBMITTED BY SENATOR D'AMATO

TWEEMILL HOUSE

Question: In the Housing and Community Development Act of 1987, there is a provision which affects a 202 project in New York City, Tweemill House. This provision, Section 162, sets up a new system for HUD to finance 202 projects for handicapped individuals. Although this provision is included in the Housing Bill, HUD has continually dodged addressing this provision and the specific 202 mentioned. After months of working with HUD, it was brought to my attention that Senator Grassley has received correspondence from HUD explaining that Tweemill House could not be funded because "appropriations were not available." The HUD-IA Subcommittee has explained to me that Tweemill -- as well as other handicapped 202s -- could easily be funded through a simple reprogramming. Can I get your commitment to submit a reprogramming request to the Congress for this project, and to see the project through to its completion?

Answer: Under the Section 8 program, adjustments to prevailing fair market rents (FMRs) are limited by law to not more than 120 percent. The proposed 40-unit Tweemill House proposal is extremely costly--with average per unit development cost of $113,000. The Section 8 rents required to support the project would need levels representing 146 percent of the prevailing FMRs--well above the statutory limits. The new project-based dwelling unit subsidy authorized under Section 162 of the Housing and Community Development Act of 1987 is intended to assist proposals such as Tweemill House that encounter difficulty in complying with financial feasibility. The new dwelling unit subsidy, however, is contingent upon Congressional approval of a specific appropriation. We have no authority to reprogram funds to implement this subsidy, since a reprogramming may be done only within an existing appropriation. In the absence of a specific appropriation we are not in a position to carry out Section 162 and we cannot, at present, fund Tweemill House.

ROUSE - MAXWELL REPORT

Question: Senator Cranston and I are working on a comprehensive housing bill to be introduced in July. A recent report generated from the National Housing Task Force chaired by Jim Rouse and David Maxwell contains a number of recommendations for alterations in housing policy. Do you support this report? Would you support a program providing more streamlined, flexible money to the States and local governments for housing production, rehab, and acquisition? If you are familiar with the report, what do you see is its greatest strength?

Answer: The Rouse - Maxwell report contains a number of interesting recommendations which we are considering seriously. We expect soon to complete a comprehensive response to the report which should be ready for distribution in late June.

QUESTION SUBMITTED BY SENATOR DOMENICI

SUPPORTIVE HOUSING

Question: Mr. Secretary, I join my colleagues in welcoming you to today's hearing and commend you for your long service to the Administration and the the Department of Housing and Urban Development.

We are all aware of the budget constraints under which the Administration and the Congress must operate this year in order to meet the deficit reduction goals of the Bipartisan Budget Agreement. I recognize that the budget request for your agency reflects some of this reality. I would like to take just a moment to focus on the homeless programs, if I might.

The budget justifications indicate appropriations made available for the Supportive Housing Demonstration Program through FY 1988 will be fully obligated by the end of this fiscal year. Based upon HUD's experience to date, could you give the Subcommittee a brief overview of types of projects that have been proposed and funded by HUD under this program?

Answer: The transitional housing component of the Supportive Housing Demonstration has received 351 applications to date, requesting over $177 million.

Of these, we have funded a total of 129 applications to date, for $58,888,407. Of these, 52 applications for $22,185,323 were for families with children, 35 applications for $19,490,117 were for mentally disabled, and 42 applications for $17,212,967 were for others.

The funded grants represent a wide range of applications and approaches. For example, one grant will serve 24 families and some individuals on the third floor of a large multi-purpose facility in which the city and non-profit organizations will deliver necessary services. Another grant will serve four families of battered women in a four-plex in which support will be provided both by grantee staff and city agencies. Another grant will support approximately 52 released offenders, some of whom are recovering drug abusers, in a single room occupancy type facility being extensively rehabilitated. Services are being provided by in-house staff funded through rent, city/State and some foundation support.

SUBCOMMITTEE RECESS

Senator PROXMIRE. The subcommittee will stand in recess until tomorrow at 10 when we will continue to take testimony from the Department of Housing and Urban Development in this room. Thank you, sir.

[Whereupon, at 12:10 p.m. Monday, April 18, the subcommittee was recessed to reconvene at 10 a.m. April 19.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

TUESDAY, APRIL 19, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10 a.m. in room SD–124, Dirksen Office Building, Hon. Barbara A. Mikulski presiding.

Present: Senators Mikulski, Lautenberg, and Grassley.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

STATEMENT OF CARL D. COVITZ, UNDER SECRETARY

ACCOMPANIED BY:

- J. MICHAEL DORSEY, GENERAL COUNSEL
- THOMAS T. DEMERY, ASSISTANT SECRETARY FOR HOUSING-FEDERAL HOUSING COMMISSIONER
- JAMES BAUGH, GENERAL DEPUTY ASSISTANT SECRETARY FOR PUBLIC AND INDIAN HOUSING
- MARK BUCHMAN, PRESIDENT, GOVERNMENT NATIONAL MORTGAGE ASSOCIATION
- JACK STOKVIS, GENERAL DEPUTY ASSISTANT SECRETARY FOR COMMUNITY PLANNING AND DEVELOPMENT
- KENNETH BEIRNE, ASSISTANT SECRETARY FOR POLICY DEVELOPMENT AND RESEARCH
- JUDITH BRACHMAN, ASSISTANT SECRETARY FOR FAIR HOUSING AND EQUAL OPPORTUNITY
- JUDITH L. HOFMANN, ASSISTANT SECRETARY FOR ADMINISTRATION
- PAUL ADAMS, INSPECTOR GENERAL
- THOMAS CASEY, DEPUTY ASSISTANT SECRETARY FOR LEGISLATION, OFFICE OF LEGISLATION AND CONGRESSIONAL RELATIONS
- JAYNE GALLAGHER, DIRECTOR, OFFICE OF PUBLIC AFFAIRS
- TIMOTHY COYLE, DEPUTY UNDER SECRETARY FOR FIELD COORDINATION
- ALAN GREENWALD, DEPUTY UNDER SECRETARY FOR INTERGOVERNMENTAL RELATIONS

ACCOMPANIED BY—Continued

CASSANDRA C. MOORE, EXECUTIVE DIRECTOR, INTERAGENCY COUNCIL ON THE HOMELESS

ALBERT J. KLIMAN, DEPARTMENTAL BUDGET OFFICER

OPENING REMARKS

Senator MIKULSKI. The Subcommittee on HUD and Independent Agencies of the Appropriations Committee will come to order.

This is the second day of review of the 1989 budget of the Department of Housing and Urban Development.

We want to alert the people here that we are short a court reporter and we expect that person to arrive somewhere within the next 15 minutes. In the meantime, not to delay the proceedings we have, I think, three tape recorders in operation so that we can record the auspicious commentary of this particular hearing.

We want to say good morning to the representatives of HUD. However, I think it is distressing to the committee that Secretary Pierce has chosen not to appear for the subcommittee's second day of hearings. It is troubling because we know that the Department's budget, amidst the current fiscal climate, will have many challenges and we will have tough decisions to make.

It will be challenging because housing is in the same 302(b) allocation as NASA, EPA, the National Science Foundation, and the Veterans Affairs, and they will all be competing for very worthwhile endeavors and we will need the best available information to make choices.

We found it extremely helpful to have the head of NASA come before us and talk about the priorities and the account of "must do items" in the NASA budget.

The same way with Lee Thomas, struggling with Superfund and hazardous toxic wastes. He came in with a budget that we can take a look at and begin to do some triaging, again with what would be the right support for EPA and what, with our good intentions, we might not be able to fund.

Then we get to probably one of the most critical crises facing the United States of America, which is the provision of housing for all Americans and particularly providing a safety net of housing activities for the poorest of the poor and we find that the Secretary, a two-term Secretary, cannot be with us and we just find that, quite frankly, a very irritating factor.

ABSENCE OF SECRETARY PIERCE

You, Mr. Under Secretary, the committee is not interested in a spring hazing program here and we will treat you with all of the courtesy and respect due a Cabinet officer, but we sure in hell would wish a Cabinet officer would treat the U.S. Senate with the respect that is due us as the representatives of the American people. So now we come into this hearing a bit cranky this morning and it has been characteristic of the Secretary's attitude. It is not a missed appointment with which we are concerned, but a missed opportunity, and we also feel that, for a number of years now, we have missed a number of opportunities to try to meet some of the most important challenges that are facing us in the area of housing and community development.

Well, I want to get on with some of these questions and also to have you present your testimony to us.

Did you have ongoing testimony or did you wish us just to pick up our questioning?

Mr. Covitz. Madam Chairman, as you know, Secretary Pierce was here yesterday. He did read a statement. This morning, he is at the White House and he asked me to sit in for him. I believe that his statement is adequate and we will be glad to answer questions from this point on.

CLARIFICATION FOR THE RECORD

Secretary Pierce did not appear before the subcommittee on April 19, 1988, because of a previously scheduled appointment at the White House. Senate Appropriations subcommittee staff were advised of this appointment, and his absence was cleared beforehand.

Senator Mikulski. What time will Mr. Pierce's stay be over at the White House?

Mr. Covitz. I am not sure. I don't know.

Senator Mikulski. We could have delayed the hearing.

Mr. Covitz. He had asked if I would sit in this morning.

Senator Mikulski. Do you want us to find out? Do you want us to recess so that he can get back over or what?

Mr. Covitz. He asked me to be here this morning. Frankly, I don't know the schedule for the remainder of the day. We can continue at your pleasure.

Senator Mikulski. Well, my pleasure and the pleasure of the U.S. Senate would have been if he had communicated to us his calendar and we could have made appropriate accommodations.

Speaking for the chairman, Mr. Proxmire, who is a spirited, outspoken, feisty Senator, who certainly is known for his courtesy and accommodation of Cabinet level appointees, we would have made the necessary scheduling changes for the Secretary and I just think it is an attitude problem with him, a very bad attitude.

But did you want to go on or do you have testimony in your own right?

Mr. Covitz. No; I would be more than happy to answer questions.

Senator Mikulski. Well, I really have two sets of questions, some of my own and then some questions that Senator Proxmire has.

HUD FUNDS FOR U.S./U.S.S.R. BILATERAL AGREEMENT

What I would like to do is ask the Proxmire questions first.

In the HUD budget you are requesting $20,480,000 for travel for fiscal year 1989, a reduction, I might add, of $50,000 below your current level. However, the committee has been informed that last year you spent $122,600 for 44 people to make 8 trips, 8 trips to the Soviet

Union, and another $31,489 has been spent in fiscal year 1988 so far for 2 more trips to Moscow involving 10 travelers.

How could you explain to the 30 or so low-income families who could have received housing support from those funds, why is it that you go to the Soviet Union, why was it important that 44 of you go, and why was it important that you go 10 times when a Cabinet-level officer can't even come to the U.S. Senate for 2 days in a row?

And this Senator would like to note, it was exactly on housing that Mr. Gorbachev taunted us. He taunted us with our inability to provide housing for the homeless.

Also, whenever I have traveled over to Eastern Europe, I have heard the same thing. I want to know what the heck you thought you were going to run into in the Soviet Union?

I don't think commie co-ops have a lot to teach us, but I sure would like to have an explanation for this.

Mr. COVITZ. Madam Chairman, that travel to Russia was as a result of the bilateral agreement in which President Reagan had requested the Secretary's participation. We do have the details. The Assistant Secretary for Policy Development and Research, which coordinated that activity, would be happy to respond.

Senator MIKULSKI. I want an explanation for all 10 trips and why 44 people were necessary, not 1 trip as part of a bilateral agreement, but 10 trips with 44 people.

Mr. BEIRNE. Madam Chairman, the whole series of trips grew out of the bilateral agreement, which actually dates back to the late 1970's, and was renewed by President Reagan in 1983.

Under the bilateral agreement, we agreed with the Soviet Union to set up five working groups, which involve, among other things, a Cabinet-level signed agreement, which usually involves an exchange of trips between the American Cabinet officer who has the lead, in this case, Secretary Pierce, and the Soviet equivalent, which is the head of GOSTROY. The five working groups exchange trips, usually one in each direction each year.

The working groups cover areas of building technology, Arctic temperature housing, new construction techniques, various things of that sort.

Senator MIKULSKI. Were we going to learn from them or were we going to teach them?

Mr. BEIRNE. The exchange is supposed to go both ways. That is part of the bilateral agreement.

EXPLANATION OF U.S./U.S.S.R. BILATERAL AGREEMENT

In the last round of meetings, after the agreement was renewed in 1983, the negotiations with the Soviet Union on setting up a new agenda opened up into a wider interest by the Soviet Union in exchanging information that was available from the United States, mostly through private market participants, and since most of our innovative work is done in the private sector as opposed to the way it is done in the Soviet Union, and what happened out of that was that this opened up into what turned out to be a major exhibition in the Soviet Union, as well as a series of commercial activities with the Soviet Union and with the various agencies in the Soviet Union involved in housing.

As part of that, three major trade missions went over to the Soviet Union, including the one for the STROY INDUSTRIA exhibition in May of last year, and these involved travel in two cases with the Secretary, but also by the then Assistant Secretary for Policy Development and also members of the private sector.

Initially, I believe in November 1986, they went over with about 14 or 15 private sector representatives and then in the May exhibition, besides HUD support staff that went over, there also were representatives of over 100 American commercial organizations that were represented.

Senator MIKULSKI. Doing what? I mean, are we going to sell to the Soviet Union? Are we going to buy?

Mr. BEIRNE. The basis of the exhibition and of the work that preceded it was to establish relationships between the American corporations and the Soviet housing bureaucracy for developing contracts.

In fact, during the STROYINDUSTRIA exhibition, one firm did, in fact, establish a contract for $1 million, and since then there have been continuing negotiations between the exhibiting firms and the various Soviet representatives to continue the commercial activity. So these travel expenses are all involved in a combination of things; for example, the working group activities, which involved around $200,000 in various expenditures.

There were also the commercial activities, which were primarily the follow-up activities, and also the activities allowing the American organizations to communicate with the Soviet Union.

Then, there were the major expenses involved with the negotiations and setup of the American exhibit, which was a separate pavilion, by the way, at the STROYINDUSTRIA exhibition.

Senator MIKULSKI. And a good bit of this money was used to pay the private sector to travel to the Soviet Union to create opportunities for them to have contracts with the Soviet Union?

I don't want to get too involved in it, but is that it?

Mr. BEIRNE. In some cases, usually, we separate out the activities that the private sector was engaged in simply for commercial purposes, from the activities that the private sector does as part of the working groups.

We usually have private sector representatives involved with some working group activities. In those cases, the private sector does get travel support from the agency. But in the case of commercial activities they do it on their own.

Senator MIKULSKI. Well, I think the committee still feels that an awful lot went into it, when there are very little opportunities for trade.

What we also know is one of the biggest failures of the Warsaw Pact nations is in their housing policies and in a recent trip to Czechoslovakia we saw that housing waiting lists go way back and in Poland more than a decade and a half to get into apartments, and somehow or another I don't think that Gorbachev's peristroika is to contract out to American developers.

Mr. BEIRNE. Well, actually that is not true.

The Soviet Union has, in fact, announced a policy that involves the establishment of various types of joint ventures and they have put a priority into the housing and construction programs, enabling the agencies involved in housing and construction in the Soviet Union to act in a much more decentralized fashion to contract with, in our case, United States construction firms.

So that, at least right now, they do appear to be making an effort to establish this type of contracting arrangement.

Clearly, we do have many technological and construction advantages over the Soviet Union because of the diversity and the freedom of our housing industry and I think they are very interested in tapping into that.

Senator MIKULSKI. Well, I think we have run our string on this series of questions. We just think it is odd that so much had to go into what we think will result in so little. However, we note that our reporter is here and we are going to suspend questions for a minute until you get set up and we want to thank the staff here who has tried to provide the recording up until now.

[A brief recess was taken.]

Senator MIKULSKI. Let's move on.

EMERGENCY SHELTER GRANTS

One of the other areas that we want to raise questions about is the emergency shelter grants.

We note that the funding for emergency shelter grants is supported by many in the subcommittee and you justify ending funding for it by stating that other HUD programs like supportive housing demonstration, CDBG, and other programs are being used for the same purpose. However, with the exception of a $10 million increase in supportive housing, you are requesting decreases in other HUD programs.

How would you expect those programs to fund emergency assistance to the homeless, given all of the decreases that you have requested?

Mr. Deputy, if you would like your assistant to help you with anything, that is fine.

Mr. COVITZ. Thank you, Madam Chairman.

Senator MIKULSKI. What we are trying to get at is, you say you are not requesting funds for emergency shelter grants and you say they will be taken care of by other programs, but you are also decreasing the funding for those programs.

Our question is, how can we meet the emergency shelter program needs?

Your assistant can answer if he wants to comment.

Mr. COVITZ. On the question of the homeless, Madam Chairman, the total spending requested for 1989 within the different government departments is greater than it was in 1988 by some 3 or 4 percent.

We think that the money is more efficiently spent or requested in the other federal agencies. We have limited our requests to those areas that we are focused on. In total, the funding request for the homeless category is greater in 1989 than it is in 1988.

Senator MIKULSKI. Would you want to comment on that, Mr. van der Voort?

Mr. VAN DER VOORT. I would suggest that the major reason for that is that we provided a very significant amount of money in a 1987 supplemental appropriations bill that passed in July, I believe, and if you look at the obligations and so forth, I would imagine there is quite a change there.

Mr. COVITZ. Mr. van der Voort, the figures that we have been provided, including HUD, HHS, and USDA, show in 1988 we had a budget of $374 million and in 1989 we are requesting $390 million.

Mr. VAN DER VOORT. Does it include the 1987 supplemental?

Mr. KLIMAN. The table that the Under Secretary is looking at deals with budget authority rather than obligations, so that the 1987 supplemental is recorded in 1987.

COMMUNITY DEVELOPMENT REDUCTIONS

Senator MIKULSKI. Mr. Deputy Secretary, the Community Development UDAG Program is a key to urban revitalization in so many areas.

We understand HUD's fiscal year 1989 budget would cut CDBG, the Community Development Block Grant Program, by 9 percent, and totally eliminate the UDAG Program, a cut of $216 million.

This proposal came to Congress only 2 months after the President signed the housing authorization at higher levels.

What did HUD ask OMB for in both programs and what is the rationale for eliminating the UDAG Program, which was one of our programs for public-private partnership where we essentially had our own joint venture between the government, the local community, and the private sector?

I know in my own hometown the UDAG grants in the inner harbor really helped us save ourselves. Those UDAG's have attracted over $1 billion in private investment in our community and its revitalization.

Mr. COVITZ. Yes, Madam Chairman. There is no question that the UDAG Program has had tremendous benefits over the years in terms of providing new jobs and urging the investment of private funds.

Nevertheless, as you mentioned earlier, there is certainly need for fiscal restraint. It is the administration's policy that the UDAG Program, as good as it is, is one which should be sacrificed in order to provide funds for the primary mission of the Department, which is to provide housing for those more in need.

It is for that reason that UDAG has been zeroed out for next year. Congress, in its determination, has seen fit to restore it in prior enacted budgets.

Senator MIKULSKI. So you have taken the UDAG money and moved it to another place?

Mr. COVITZ. In the 1989 budget, yes. It has been zeroed out.

Senator MIKULSKI. I know that UDAG has been zeroed out. You choose, then, to make the primary mission of HUD to be housing. I thought it was housing and urban development. But if you take urban development as part of the HUD—however, then your primary mission is only housing.

My question is, are you really proposing to zero out UDAG and then take UDAG's money and put it into housing programs?

Mr. COVITZ. Well, there is no question that in evaluating a budget requirement, that the components are considered to be within the categories of the total funds available. The urban development category continues in the CDBG block grants.

Senator MIKULSKI. So, as I note, you eliminated all UDAG money, $216 million, and you have not transferred it to housing, you just knocked out the $216 million altogether; is that right?

Mr. COVITZ. That is correct.

Senator MIKULSKI. And the same is true with the Community Development Block Grant Program, which you reduced by 9 percent—$400 million; is that right?

Mr. COVITZ. It is about a $200 million reduction.

Senator MIKULSKI. But those are the basic tools that were used at the local level?

Mr. COVITZ. Yes.

Senator MIKULSKI. And your rationale is that your primary mission is housing?

Mr. COVITZ. No. In the total picture, within the fiscal constraints that we are operating, we have determined that these are the priorities of spending. That is the reduction of $200 million in the CDBG and the elimination of the UDAG grants.

Senator MIKULSKI. That then takes me to two other questions and then we will turn to the Senator from New Jersey.

NEIGHBORHOOD DEVELOPMENT DEMONSTRATION

One is a technical thing. One of the few neighborhood oriented programs—and we are very much interested in neighborhood development here—is something called the Neighborhood Development Demonstration Program. It has been funded at a moderate level, I believe $1 million in each of fiscal years 1986 and 1988.

And this is one of those small items, Mr. Deputy, that you might not know, but I want you to know because I am very much interested in this program and I asked the Secretary for a list of what actually has been done with this money.

I am trying to get the Department's report on the first round of grants to the Neighborhood Development Demonstration Program. I sent a letter to the Secretary on March 31, asking for this report, and I wonder when I can get a response to that?

Mr. COVITZ. Madam Chairman, we have with us the General Deputy Assistant Secretary in charge of Community Planning and Development.

Mr. STOKVIS. Madam Chairman, we sent you a draft response to your letter of March 31 at the end of last week. I will admit this was not as fast as I would have liked it to be. I had a slight problem. Through a staff snafu, your letter was never delivered until last Friday, when I sent a draft facsimile directly to your office.

Our response on the neighborhood development demonstration report was that the evaluation report was received only recently.

Senator MIKULSKI. Are you saying that the Council people are speedy and that mayors aren't?

You never worked under Mayor Schaefer. He is a "do it now" guy.

Mr. STOKVIS. I have to take the burden of responsibility for not getting this response quicker to you.

The fact was that we were not able to send you the report because it has not gone through the internal HUD review. It was only received recently by our Office of Policy Development and Research and I have the Assistant Secretary next to me, who is presently reviewing it.

As soon as we have been able to review it, we will, of course, pass it directly on to you.

Senator MIKULSKI. Well, we haven't gotten an answer to the letter. It might be in the mails.

Mr. STOKVIS. It was supposed to be faxed to your office last Friday.

Senator MIKULSKI. Well, it was not delivered.

The other thing—and I note that this has been in the works for a year—when can I get this report after the internal review, comment, evaluation, analysis, and whatever else you plan on doing?

Mr. BEIRNE. Madam Chairman, actually, with luck, we might have had it available today.

Senator MIKULSKI. This is not your lucky day. [Laughter.]

Mr. BEIRNE. The clearance has been very rapid. I would think that it would be only a matter of days to get the report to you.

Senator MIKULSKI. Thank you.

I have some other questions, as I am sure the Chairman has some also, but we want to recognize Senator Frank Lautenberg.

Senator LAUTENBERG. Thank you, Madam Chairman.

I assume you noted the Secretary's absence. I would just like to register my own amazement at the Secretary's lack of interest in cooperating with the Congress. I don't know whether or not it is just his contempt for the Congress, for the Senate, or whether or not it is his contempt for the programs that he is responsible for managing and implementing.

I sense that it is a combination of both.

For some reason or other, Secretary Pierce feels that he is exempt from the process and, Madam Chairman, I hope that maybe we can discuss this in an executive session to see what we can do to encourage the Secretary to keep commitments in both a timely and regular fashion.

I am not going to suggest that the people at the table are responsible for the Secretary's schedule, so I will leave it at that.

But I will pose questions to you that, frankly, I would have preferred to address to him, and this having nothing to do with either your lack of knowledge or your lack of interest in the issues, but it is customary when we have a hearing to have the head of the Department here.

RADON CONTAMINATION

Last year I asked a question about HUD's programs to address radon contamination in our nation's homes. A year ago, the Secretary of HUD was in the process of developing a radon policy relating specifically to HUD assistance programs.

A year ago, the Secretary said that HUD was working with EPA on radon as required by law and yet, a just concluded study by GAO had this to say about HUD's radon efforts. They said that HUD doesn't have a national policy regarding radon and that "you are not working on one. Despite Superfund requirements that you work with EPA on radon, you have not produced a thing."

We are talking about the No. 2 cause of lung cancer in this nation: radon in homes. It is estimated somewhere between 5,000 to 20,000 cases a year of lung cancer, or death from lung cancer, results from exposure to radon, but the Secretary apparently is not concerned about the issue.

HUD makes promises that it doesn't keep. Should we conclude that the Department doesn't think that radon is a problem that HUD ought to concern itself about?

Mr. COVITZ. Senator, before we answer specifically that question, I would like to comment on your opening remark. Secretary Pierce was here yesterday and was available for the day. He had an appointment at the White House this morning and asked me to take his place. In terms of the suggestion about his commitment, I believe this.

Senator LAUTENBERG. Why don't you let him defend himself and just answer the question.

Mr. COVITZ. The question on radon can be handled by our Department of Community Planning and Development.

Mr. STOKVIS. Yes. My name is Jack R. Stokvis and, if you recall, we had a discussion on this subject on April 1, 1987.

We recently updated our handbook on radon, which I presented to you last year. I want to comment a little bit, and this I will give you, on the recent GAO report which my staff only received about 2 days ago and which you commissioned a year ago, because one of the comments in there, which you correctly read, was about HUD's policy.

We do have a radon policy, but we do not have a congressional mandate and law to undertake particular activities.

CLARIFICATION FOR RECORD

The Department's policy is to deal with identified radon problem sites on a case-by-case basis. Examples of actions taken are given in the GAO report. As we stated last year, a more formal, departmentwide policy requires interagency consensus on acceptable national standards for radon exposure in building designs, materials, and methods to reduce radon exposure, and techniques to identify elevate radon levels prior to con-

> struction. Given EPA's primary responsibility for radon research under title IV of the Superfund Amendments and Reauthorization Act, we look to them to establish the acceptable standards.

Therefore, in the absence of a law, what we are attempting to do regarding radon is to follow the guidance of other federal agencies that have far more money and far more experience on the radon issue.

I have statistics here, for example, that total federal government expenditures proposed in fiscal year 1988 are $18 million and that is up from about $10 million in 1987 and $8 million in 1986.

HUD, as you know, as far as funding for radon, is a minority player, although, of course, a very important player in the issue.

We do not take this problem lightly and as I testified last year it is a very serious and difficult problem to deal with.

When HUD in 1982 tried, in Montana, to test for radon, we found that the tests could be easily circumvented by simply opening the windows. In addition, the housing insulation, which occurred after the energy crisis, further increased the radon problem in housing.

We are doing a lot of things. We are quite active with the Committee on Interagency Radiation Research and Policy Coordination and in this book, which I prepared for the committee that I would like to put in the record, we are trying to take an active role on this problem.

I want to also introduce my Office Director, Dick Brown, who is head of our Office of Environment and Energy, and is my key staff person working on this very difficult problem.

RADON MANDATE

Senator LAUTENBERG. Jack, I would like to make reference to the Superfund law and you said that you weren't specifically mandated with the responsibility.

Under title 4, "Radon Gas and Indoor Air Quality Research," section 4, section 103, the item is (b)(5):

> Research to be carried out in conjunction with the Secretary of Housing and Urban Development for the purpose of developing (a) method for assessing the potential for radon contamination of new construction including but not limited to consideration under the moisture content of soil, porosity of soil, and radon content of soil; and (b) design measures to avoid indoor air pollution.

So it is a fairly specific mandate, as I see it.

What we are concerned about is that we haven't seen any action that gives us assurance that HUD sold property with either a caution or by reducing the level of radon contamination.

Should the government be in a position where we are selling a piece of property in which a resident or an occupant may be injuring his health without some warning or some information that says, "This is a dangerous condition" and that we, the U.S. Government, ought not to be passing off this kind of problem on an innocent occupant or person.

You are required to work with EPA.

As a matter of fact, the 1949 Housing Act requires HUD to assist in production of housing of sound standards of livability.

The GAO says that is sufficient to support HUD action and do you agree with that?

Mr. STOKVIS. Could you restate that?

Senator LAUTENBERG. The 1949 Housing Act requires HUD to assist in production of housing of sound standards of livability.

The GAO says that that is a sufficient instruction, direction, to support HUD action on radon, and do you think that is so, or don't you?

Mr. STOKVIS. Well, we are working on the problem. I think what you mean to infer is that HUD should set up its own standards today.

Senator LAUTENBERG. No; I am saying HUD should conduct the research.

OTHERS EFFORTS ON RADON ISSUE

Mr. STOKVIS. As you know, Senator, there are other federal agencies that produce housing and insure housing, the Farmers Home Administration, the Veterans Administration, and our policy has been that we are the user of this radon information and that we take our cue from others. We feel very strongly that there should be one federal standard.

I want to point out that regarding radon, there are many States that have been far more involved in this, including your home state of New Jersey. New Jersey has been quite active because of the existence of the radon prone Reading Prong. Other states like Florida and Colorado have also dealt with this problem.

Our position, as I stated it, is that we are the user of the radon information and we want to make sure that people who buy HUD-insured housing know what they are doing, but we also don't want to waste public money and require meaningless tests.

Senator LAUTENBERG. Are you saying that if a state has not adopted a policy dealing with radon, the residents of those states ought to be left to their own devices, that we don't have an obligation, even though, frankly, we are proscribed by law to involve ourselves in these projects, and that we ought to say, "Well, that is just too bad"?

I think that it is apparent that under the law, and with the concerns that we have with radon, we have to get on with doing the research that is required, with providing the information, with helping to develop a standard.

The other agencies have also, frankly, been neglectful when it comes to radon contamination, and we are looking for HUD, the principal housing agency in the government, to get on with it.

Mr. STOKVIS. If I could speak to that, we are contributing to research, including a $40,000 contribution to the National Bureau of Standards' research on this.

I want to point out one flaw that we discovered in reading the GAO report, which, as I understood, took a year to produce and we just received, is that the radon research of the Department of Energy, which is this year being funded, I am told, at $14 million, was omitted from that report. That is the largest federal funding of radon.

And talking of money, EPA is spending approximately $4 million this year on the radon issue. This is far in excess of the budget of the

Department of Housing and Urban Development to deal with this issue.

Senator LAUTENBERG. You have no responsibility to evaluate the Department of Energy's program. If they are spending $14 million, who should say whether it is appropriate or not appropriate? You have your own responsibility.

GAO RECOMMENDATIONS

GAO recommended that you incorporate and evaluate the effectiveness of radon mitigation techniques in new construction, new construction financed by HUD.

In fact, HUD is incorporating mitigation standards measures in one apartment building in Bethlehem, Pa., but if a new HUD housing facility goes up in Hackettstown, N.J., nothing is done. Before the building is built, we ought to be doing things about it. Then homeowners will have to pay for their own mitigation measures, measures which EPA says will cost five times more after the building is built than if they had been installing radon resistance measures when the construction was underway.

Don't you think that in radon prone areas, like the Reading Prong, it makes sense to build in radon reduction measures before the building is built?

Mr. STOKVIS. I definitely think it is more advantageous, cost effective, and certainly better for the health of the people living there and working there.

Our approach is to work with the states on this issue. We are working with the state of New Jersey, I am told, on this, and other states that have major problems. The thing that I have been trying to say is that we don't have the congressional mandate and law to do all of the research ourselves and to set up standards that would be different from other federal agencies that insure housing.

More particularly, we are a minority player in the production of new housing. There is more housing produced outside of HUD than with HUD. We have a big problem and we are trying to address it.

Senator LAUTENBERG. The fact that you are a minority player does not excuse you from implementing or from developing information that would help avoid injuries to the health of occupants of these facilities. You said that effectively by getting the mitigation procedures in the building in Bethlehem, Pa.

Now, if you think it is important in that building, then you have to agree that it is important in other buildings. You recognize that radon is a threat. We discussed this. There is confirmation of the fact that radon is a very serious problem, second only to cigarette smoking in terms of causing lung cancer, involved in lung cancer, so we are looking for HUD to carry its share of the burden.

When we get a report from GAO that says that HUD has virtually done nothing about their responsibility there, we are concerned.

The message very clearly is that we believe that HUD has responsibility that we would like to see acknowledged and dealt with. We are going to be looking to the Department to respond.

I have other questions, Madam Chairman, but I will submit them for the record, and I thank you for the opportunity to ask these questions.

Senator MIKULSKI. Thank you, Senator Lautenberg.

I have one question for myself, one from Senator Proxmire, and then others that we would like to submit to HUD for the record.

I understand that the HUD Inspector General is here, is that correct?

Mr. COVITZ. Yes; that is correct.

Senator MIKULSKI. Would you identify yourself and I have a question from Senator Proxmire.

Mr. ADAMS. I am Paul Adams, the Inspector General.

STATUS OF INSPECTOR GENERAL REPORT ON FAIR HOUSING PUBLIC RELATIONS

Senator MIKULSKI. Yesterday, Mr. Inspector General, Senator Proxmire quizzed rather strongly the Secretary of HUD on the Fair Housing Public Relations Commission. The Secretary responded by saying that the IG's Office was preparing a report but refused to give a date when the report would be available.

This committee will not ask for the content of the report until you, of course, completed your analysis and investigation.

Could you tell us, first, is that a subject of scrutiny in your office and; second, when can we expect the report to be completed?

Mr. ADAMS. It has been completed, Madam Chairman, and the report has been provided to the Secretary.

Senator MIKULSKI. Well, Mr. Deputy, we would like to have a copy of that report.

Mr. COVITZ. Madam Chairman, I believe the Secretary said yesterday that he had received the report, was evaluating it, and was in the process of determining what other steps he would like to take in its evaluation.

Senator MIKULSKI. So where are we?

Mr. COVITZ. The Secretary said that when he was finished with his review and evaluation, he would release it.

Senator MIKULSKI. When will that be?

Mr. COVITZ. He was not in a position to answer that, nor am I.

IG REPORT PROCESS

Senator MIKULSKI. Well, I know he is busy over at the White House and it is hard to get to that report, but one of the reasons that we have an Inspector General—and Mr. Adams, we thank you and all of the Inspectors General for the important work that you do—is that we can have this information available as it was meant to be for both the executive as well as the legislative branches in resolving certain conflicts. We need that report.

Mr. Inspector General, I just want to be clear on the law. After any IG report, when you forward a report to the executive of one of the agencies, is there a trigger at which it can be forwarded automatically to the legislative branch?

Mr. ADAMS. I am not sure I understand the question.

Senator MIKULSKI. When you send your report to the Chief Executive, and we want to make sure—well, as I understand there is a safety net or provision in the law that it just couldn't be stopped, it couldn't be stifled, it couldn't be stonewalled or swept under the rug, and that ultimately there is a triggering so that the report would automatically be released to the Congress. Is there a timetable for that?

Mr. ADAMS. There is no specific timetable, Madam Chairman. In the normal process, the person receiving the report, be it the executive or the Department of Justice, or whoever the person, they would have an opportunity to act upon the report before it is forwarded.

Senator MIKULSKI. When did you send the report to the Secretary?

Mr. ADAMS. You are testing my memory and I would have to think about this for a moment. It was about March 15, as I recall, Madam Chairman.

Senator MIKULSKI. March 15. Well, it wasn't just yesterday?

Mr. ADAMS. No, Madam Chairman.

Senator MIKULSKI. Well, Senator Proxmire and this subcommittee would like to have this report, recognizing all of the strains upon the Secretary, we would like to have this within 10 days.

Mr. COVITZ. I will be glad to pass the message on to the Secretary, Madam Chairman.

Senator MIKULSKI. We would like it within 10 days and failing that, Mr. Under Secretary, we want some response to our concerns from your IG. If not, we will have to deal with it in executive session and I don't believe you want us to deal with that report in that fashion. But if you want us to play hard ball, we will.

We are asking for a normal flow of the process that we have established in dealing with this kind of report.

NATIONAL HOUSING TASK FORCE

The next question that I have is that I understand, Mr. Deputy, that Mr. Maxwell and Mr. Rouse, in a response to the U.S. Senate, established a task force in housing to give us recommendations on housing initiatives.

This National Housing Task Force submitted a report called, "A Decent Place to Live," and submitted that to us several weeks ago. There is no comment on this from HUD in your statement.

Have you had a chance to review this and provide us with a critique of the Rouse-Maxwell report and your recommendations on how we should pursue, if at all, their recommendations?

Mr. COVITZ. Madam Chairman, we have received the report and its conclusion and are evaluating it. We will be making our position known on it.

Obviously, there are some things in it with which we agree. I think there are a number of things in it with which we don't agree.

You should know that we supported the effort of Senators Cranston and D'Amato in encouraging this. In fact, HUD provided some staff support to the Rouse-Maxwell Commission, in order that they might have the benefit of the history of our past HUD programs as well as the current HUD programs.

We will be supplying our evaluation of the report and the particular recommendations.

Senator MIKULSKI. Well, I think the committee would welcome your responses to the Rouse-Maxwell recommendations. When do you think that will be done?

Mr. BEIRNE. Madam Chairman, actually, the Rouse-Maxwell report has generated a fair amount of discussion among the principal staff at the agency and that discussion should be complete within the next few weeks I would guess. We are looking for responses from each of the Department's program officers, since the report covers a wide range of HUD programs.

After that, we will be able to make some kind of general statement, but at this point we don't have a firm timetable for this.

Senator MIKULSKI. Do you have a goal of a timetable?

Mr. BEIRNE. Well, my own goal would be to have a response within about a month, but I suspect that the Secretary or the Under Secretary might want a faster one.

Mr. COVITZ. Yes, Madam Chairman, the goal will be to provide as thoughtful and informative an evaluation as possible.

Senator MIKULSKI. The Rouse-Maxwell Commission is indeed far-reaching and it is not modest in expenditure nor modest in vision, which I think makes an exciting document to generate discussion and we would really welcome the kind of technical and policy comment that you could provide.

We have additional questions from Mr. Proxmire that I will submit for the record and I would like to now turn back to Senator Lautenberg here.

Senator LAUTENBERG. I just have a couple of quick questions, Madam Chairman, if it is all right with you.

Senator MIKULSKI. Absolutely; it is fine with me. In fact, if you would continue as we have and if you would take over the chair, then you may yield to yourself as much time as you would want.

Senator LAUTENBERG. Glad to; thank you.

Are there other questions to be submitted for the record?

OK, we will submit those to you and we would ask for a response during this 100th Congress, please. [Laughter.]

You are entitled, I guess, as you sit there, to be called "Mr. Secretary," so we will call you "Mr. Secretary."

NATIONAL AND REGIONAL HOUSING POLICY

You said, or your Department said, that the housing problem in this country is primarily one of affordability, not availability. This contention typically is supported by national statistics that obscure significant differences in housing availability in the different areas of the country.

In many areas there is an acute shortage of available housing, particularly for low-income people.

Now we may not be seeing any problems in Houston, but there are very serious problems in the state of New Jersey. Shouldn't the federal government adopt a more regionally oriented housing policy if it wants to meet these needs?

Mr. COVITZ. Mr. Chairman, the answer to that is "Yes." There is no question that, whereas their vacancy rate today is the highest it has been in 20 years, there are pockets of serious problems. In fact, the administration has proposed allowing the use of CDBG funds at the discretion of the recipients, to use those funds for building, for new construction, if they determine that the need is their priority.

We encourage a targeted program of new construction in those areas where there is a critical need.

NEED FOR NEW CONSTRUCTION

Senator LAUTENBERG. The CDBG funds, though, are often needed for other essential projects within the community. HUD has dramatically reduced new construction of housing for low-income people and defends this by the statistics that show high vacancy rates nationally.

Obviously, a vacant place, where there is no demand, does not take care of homeless people in the areas who are desperately looking, in many cases, for housing.

Shouldn't we be investing more resources into construction of low-income housing in the areas where there is a real need?

We have all been made aware of the painful problems that the homeless are going through and I have to confess that, for me, it was rather surprising to find out that some of the people living on the streets are people who have jobs and an income and just cannot find a place that fits within their capacity to pay.

I think that it is essential that we carry out a mandate that we have in the nation: to try to help people who have no place to go or too little to eat.

In terms of the living accommodations, don't you think we ought to be investing more funding in low-cost housing?

Mr. COVITZ. Yes, Senator. As I said earlier, I think there is no question that we agree. There are particular geographic needs, and in the past the HoDAG Program, which was a new construction program, was one that we felt was much too broad. That program specifically could be designed for the targeted needs.

We are encouraging in the fiscal 1989 budget submission, that the CDBG funds be used at the grantee's discretion for new construction. There is also the low-income tax credit which we hope will also utilize new construction in areas of particular need.

Senator LAUTENBERG. I heard you the first time when you suggested that CDBG funds be used. On the other hand, it is a continuous battle to maintain the levels of CDBG funding from year to year.

We hear about the reduction in UDAG funding and it appears that you are saying that cities that cannot afford to provide the necessary facilities for low-income housing ought to use programs that you are trying to get rid of.

Frankly, we can debate this thing forever, but there are more and more people living on the streets and more and more people who cannot afford the rent or cannot afford to acquire a house.

RECENT HARVARD UNIVERSITY HOUSING STUDY

A recent report by the Joint Center for Housing Studies at Harvard University found out that the rate of homeownership, especially among young people, has fallen considerably in the last 8 years.

This is a nationwide phenomenon that affects areas with strong economies as well as those struggling economically.

What is HUD doing about this and what additional steps do you think you might take?

Mr. COVITZ. Perhaps one of the most significant issues is the priorities that we utilize to assist the first-time buyer, the FHA program.

As you know, the 1987 Housing Act focused on FHA in four important ways. It generated permanent authorization for the FHA. It increased the mortgage limits according to the geographic location competitive situation and it also provided a larger percentage of variable rate mortgages available to the home buyers.

The FHA Commissioner is with us today and, perhaps, he might like to add to that.

Mr. DEMERY. Good morning, Senator. I am Tom Demery, the Assistant Secretary for Housing and the Federal Housing Commissioner.

In addition to the Under Secretary's remarks, I would like to make a couple of comments on how the 1987 Act relates to the multifamily and single-family issues that you raised.

ISSUE OF AFFORDABILITY

The issue of affordability has been addressed by the Department through our voucher program. We have developed a voucher program that works effectively in all markets across the United States. We have been very effective in using vouchers and institutionalizing them as a main line housing program to overcome the problems associated with affordability. As you said, the people somehow find themselves without a place because they can't afford it.

A voucher program, the rental rehab program—to address the stock issue—and the new construction that will hopefully result from the tax credit program are all initiatives we are using as part of the federal government's participation in the partnership with the states and private sector in the development of housing.

DECLINE IN SINGLE-FAMILY HOME OWNERSHIP

As it relates to the single-family issue, you mentioned the decline in the homeownership rate among young people and first-time home buyers. That is a statistic that we at FHA are certainly aware of. We are looking behind the statistics to try and determine a couple of things: to see if there is something unique about the physical act of buying a home that would cause this statistic to decline, or to see if this is part of a more generalized trend among the traditional age group of first-time home buyers. What we have found, on almost an across-the-board basis, is that there is a decline in similar indices that are related to the decision to buy a home.

For example, the rate at which young adults, who are the traditional first-time home buyers, are forming households, has declined.

The decision to pursue postgraduate degrees has also contributed to this decline in homeownership rates. Obviously, the time invested in postgraduate work delays the time when a person will buy a home. Additionally, the debt that is incurred for education, significantly diminishes the savings of the traditional first-time home buyer.

Doubling up—people living at home longer to pursue these endeavors such as getting more established in their careers—all of these things are contributing factors to the decline in the homeownership rate.

What we have done at FHA is to actively work with interest groups, communities, and so on, to make sure that there are programs in place that communities can use, should they wish to mount an aggressive campaign to lure and encourage participation in homeownership. I am talking about a program we are working on with the city of Philadelphia, and other communities as well, to help the first-time home buyers, usually at the lower end of the economic scale, participate in the process.

Senator LAUTENBERG. Is declining homeownership something that some people feel sorry about in this country?

Mr. DEMERY. Yes, Senator.

Senator LAUTENBERG. In the list of reasons that you gave for less homeownership occurring, you didn't include affordability as one of the deterrents to homeownership.

Now, I heard you talk about FHA's programs and vouchers and so forth. The fact of the matter is that there are lots of young people, lots of people who cannot afford to buy a house.

If you are saying that if you cannot afford it in this country, too bad, that is the breaks of the game, then I don't think that we are taking a responsibility that is appropriately ours, and that is to encourage people.

We cannot provide them with income, but the fact of the matter is that there is a decline in homeownership and we can debate here whether it is the graduate studies and people staying at home and lots of people are forced to find alternatives to homeownership because they cannot afford it, but I would hope that we would be searching for ways of encouraging homeownership and maintaining the possibility for people.

HOMEOWNERSHIP IS FUNDAMENTAL

That is an aspiration that is fundamental in the development of a family, the development of an asset base, and homeownership has been critical to this.

Mr. DEMERY. I couldn't agree with you more. Home ownership certainly has been a fundamental goal of the Department. It has been one of the underlying principles of this country and has contributed greatly to this country's growth, expansion, and prosperity.

With respect to the affordability issue, in fact, over the last 3 or 4 years the affordability index for people to participate in homeownership has increased from a negative to a positive position. The National Association of Realtors are the ones that compile the affordability index. I think they have said 110 percent of median income families can afford a median income priced home. The increase in the affordability index and declining interest rates obviously speak greatly to the affordability of housing and have helped make homeownership available to millions of Americans.

In FHA, last year we had a record year in terms of initiatives and programs. We have a joint venture with state and local governments to create affordable housing in our single-family section and that program had 23 new sites in 1987 and will have 100 new sites in 1988.

Basically, the program encourages the private sector to work with local and state governments to relax the regulatory burden on housing production. Too stringent regulations greatly affect the affordability issue. For example, zoning density is one requirement that may add unnecessarily to the cost of a home for the first-time home buyer. There are many other requirements that may also increase the cost. The program has really succeeded spectacularly—reducing by up to 20 percent, in some cases, the cost of a new home.

So the Department—FHA—is taking aggressive steps to come up with programs, not Federal entitlements per se, but programs to work with communities and developers to provide affordable housing to Americans.

Senator LAUTENBERG. The operation was a success and the patient died. The fact of the matter is that we have in areas of the country like mine, incredible shortages of affordable housing.

AN INDIVIDUAL'S EFFORTS TO PROVIDE HOUSING

I point out to you the activities of some business people, whom I know you know, the Hovnanian family, who have a particular interest in providing housing—and Chuck, this may be of interest to you. These people set up a lottery so that you could get in line to buy one of their houses and they had 35,000 people wanting to buy homes.

They punch in your name and you fill out a card and something like 1,200 were drawn out of 35,000.

This is an enterprising entrepreneurial family who feels that they have a community obligation, people born in Europe, who came to New Jersey and made an incredible contribution to residential building.

Now, they could charge a lot more but they decided they don't want to do that. Obviously, when the market is that tight you can charge a lot more than they did.

Thirty-five thousand people again applied for the right to buy these houses and these are relatively, for our area, moderate housing costs, something like $150,000, which is outrageous.

All of this says to me that we are not doing enough in the government to help people acquire a house, if not a dream house, at least a stepping stone to the dream house. It is not necessarily only a question of FHA assuming more of the mortgage burden, because that mortgage burden is being diverted from other conventional sources where mortgages used to be available and interest rates have been, I think it is fair to say, relatively moderate, not cheap by a long shot, but relatively moderate, and that has not occurred and we would like the administration to come down on the recent indications.

The Harvard study reported that only 2.1 million of the nation's 7½ million poverty-level renter households lived in public housing or other subsidized housing last year. That leaves about 5½ million households in poverty who do not receive such housing assistance.

Do you think that as a society we have an obligation to do better?

Mr. COVITZ. Senator, yes, there is no question that the federal government has a responsibility to serve those in need, particularly in our mission of housing. We also recognize that it is important to include in that responsibility the private sector, the Hovnanians. We commend that kind of public spirit and it ends at the local cities and towns.

There are many indications where state and local governments are working hard in conjunction with the federal government.

The state of Massachusetts is doing an outstanding job in working together with the federal government and in the private sector to deal with the issue.

It is unquestionably a serious issue.

Senator LAUTENBERG. Thank you very much. We will be submitting further questions for the record and ask again that you respond as quickly as possible.

I think it is a job or mission that we all want to accomplish, but I frankly don't temper my criticism earlier when saying that I don't see any sense of urgency in HUD to get the job done.

I will now turn the chairmanship over to Senator Grassley and it is yours to do with as you please.

Senator GRASSLEY. Well, I will be adjourning in about 3 minutes.

INCREASE IN PHA ADMINISTRATIVE FEES

Mr. Secretary, the recently enacted 1987 housing authorization bill directed HUD to raise administrative fees to 8.2 percent for section 8 certificates and vouchers.

I understand that HUD is refusing to implement this law claiming lack of appropriations, and I would like to have you explain your position on that matter.

Mr. COVITZ. I would like to ask the General Counsel to deal with that, please.

Mr. DORSEY. My name is Michael Dorsey, General Counsel of the Department. The provision in the 1987 Housing Act is subject to appropriations and, as you know, the section 8 program does not contain an administrative fee in the language of the appropriations bill itself.

But the report, as it is prepared, and as the amounts are calculated, shows a fee in the appropriation, in the case of vouchers, 6.5 percent, and in the case of section 8 programs, 7.65 percent.

The Department is proposing for 1989 to fund at the 7.65-percent level for both of those programs, but the language in the 1987 Housing Act does not provide for the 8.2 percent unless there is an appropriation, so it would be up to the Appropriations Committee to appropriate at 8.2 percent if you want us to implement that. We don't have the capacity this year to do that.

SURPLUS PHA ADMINISTRATIVE FUNDS

Senator GRASSLEY. I have a copy of an oral flyer, and maybe you have had a chance to see it, and it announces a seminar for public housing officials and it starts tomorrow.

The main thing here is it tells about the turning your section 8 program into an efficient profit center. Yesterday, I believe Senator Proxmire questioned you about the General Accounting Office finding that public housing authorities have used their surplus administrative fees to buy band equipment, pay for lobbyists, and purchased golf balls, uniforms, and birthday cards, and, given this situation, what does the Department propose to assure that the section 8 administrative fees cover only the costs of actual administration?

Mr. DEMERY. I am Tom Demery.

We got into this question, Senator, yesterday, as you indicated. What we have done more as a result of some of the not so publicized instances of inappropriate uses of surplus income is to train our field staff to monitor more closely and communicate with the PHA's what is and is not appropriate.

We view this as an interim step. The GAO report wanted us to come up with a list of uses that are appropriate and not appropriate. That puts us in a position of monitoring, if you will, on a per expenditure basis. We think the PHA's, if they get proper training and monitoring from the field staff, are certainly capable of doing this monitoring on their own.

So what we are trying to do as an interim measure is place the responsibility for proper expenditures on the PHA's. We want them to know what are not proper uses of these funds—what are and are not community uses, which is how those surplus fees are supposed to be used.

Quite frankly, what we are paying—and this is what we included in our budget justification—is a level fee of 7.65 for both programs. Our thinking is that if they didn't have quite so much surplus there wouldn't be quite so much temptation.

Senator GRASSLEY. Well, you know in rural areas, an administration is more expensive because the housing market is tight, so that is going to be a problem.

Mr. DEMERY. Yes. We heard from PHA's in rural areas about fees when we first tried to make the fee 6.5 percent for both programs. Their response was, "Well, no, we lose money, such as the cost of travel, the cost of inspections and the distances involved," and so on.

I think that both our study and the GAO study would tend to indicate that the 7.65 percent, while less than 8.2 percent, is not so much less that it would be a burden across the board on all rural PHA's.

I am not saying that there wouldn't be one or two in remote areas, like Montana or the Far West or Northwest, that might have some difficulties. But I think, as a matter of national public policy, that the level we recommended is pretty much right on the mark.

Senator GRASSLEY. Have you had any—or is it too early, maybe, to know—any evidence of how your oversight of the fees and expenditures of this money is being received?

Are you trying to advise PHA's on this?

I am talking about the misuse of money.

Mr. DEMERY. The office parties and such?

Senator GRASSLEY. Yes. For instance, when did you take this action?

Mr. DEMERY. Right after we read the Washington Post. Of course, we have been working on this thing on an ongoing basis. The Post article and the marching bands came at a time where we were ready for a release. So we went ahead and accelerated our timetable so that we wouldn't have any more miscommunications or problems resulting from no communications.

I also want you to know that there is provision in our policy for an increase. The Secretary may increase the PHA fee, if necessary, for the higher cost of administering small programs operated over large geographic areas.

SUBCOMMITTEE RECESS

Senator GRASSLEY. The subcommittee will now recess until 10 a.m. Monday, April 25, when we will take testimony from the Farmers Home Loan Bank Board, the Neighborhood Reinvestment Corporation, the National Institute of Health and Sciences, and the Office of Science and Technology.

The hearing will take place in this room, SD–124.

The meeting is recessed.

[Whereupon, at 11:25 a.m. Tuesday, April 19, the subcommittee was recessed to reconvene at 10 a.m. Monday, April 25.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

TUESDAY, APRIL 26, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:06 a.m. in room S–126, the Capitol, Hon. William Proxmire (chairman) presiding.

Present: Senators Proxmire and D'Amato.

FEDERAL EMERGENCY MANAGEMENT AGENCY

STATEMENT OF JULIUS W. BECTON, JR., DIRECTOR

ACCOMPANIED BY:
- GRANT C. PETERSON, ASSOCIATE DIRECTOR, STATE AND LOCAL PROGRAMS AND SUPPORT
- CLYDE BRAGDON, U.S. FIRE ADMINISTRATOR
- BARBARA JACOBIK, BUDGET OFFICER
- DAVE McLOUGHLIN, DEPUTY ASSOCIATE DIRECTOR, STATE AND LOCAL PROGRAMS AND SUPPORT
- GEORGE WATSON, DEPUTY GENERAL COUNSEL
- WILLIAM TIDBALL, CHIEF OF STAFF
- GEORGE ORRELL, COMPTROLLER
- JAMES ROSE, EXECUTIVE ASSISTANT TO THE ADMINISTRATOR, FEDERAL INSURANCE ADMINISTRATION
- GEORGE WOLOSHYN, ASSOCIATE DIRECTOR, NATIONAL PREPAREDNESS
- JOHN B.K. LA BARRE, DIRECTOR, OFFICE OF TRAINING
- DENNIS KWIATKOWSKI, CHAIRMAN OF NATIONAL BOARD FOR EMERGENCY FOOD AND SHELTER

BUDGET REQUEST

Senator PROXMIRE. The subcommittee will come to order. This morning, we will hear from General Julius Becton, Jr., Director of the Federal Emergency Management Agency. FEMA is requesting a fiscal year 1989 budget of $698 million, an increase of about $66 million, or 10 percent, over the Agency's current budget. The budget request increases the disaster relief fund by $80 million and cuts emergency food and shelter by $34 million, holding salaries and expenses and emergency management planning and assistance to 7 and 3 percent increases, respectively.

Welcome to you, General Becton. You may go ahead and summarize your statement with the understanding your prepared statement will be printed in full in the hearing record, and then we will have some questions for you.

INTRODUCTION OF ASSOCIATES

General BECTON. Thank you, Mr. Chairman. We are delighted to have an opportunity to present our budget to you and to your committee. We are, indeed, grateful for your assistance and support in helping to carry out the FEMA mission. I would like to first introduce the members of the FEMA team, many of whom have appeared before you before. On my extreme right is Dr. John La Barre. He is the Director of the newly established Office of Training. Next to John is George Woloshyn, the Associate Director for National Preparedness; and of course, Barbara Jacobik, our outstanding Budget Officer who keeps us all out of jail.

Senator PROXMIRE. Did you say out of jail? [Laughter.]

General BECTON. I hope that didn't get in the record. [Laughter.]

On my left is Grant Peterson, who is our new Associate Director for State and Local Programs and Support; and on Grant's left is Clyde Bragdon, the U.S. Fire Administrator.

Sitting in the rear of them, Dennis Kwiatkowski, who is the Chairman of the National Board for Emergency Food and Shelter; next to Dennis is Dave McLoughlin, the Deputy Associate Director for State and Local Programs and Support; and next to him is our Deputy General Counsel, George Watson. Directly behind me is my Chief of Staff, Bill Tidball, and to Bill's right is George Orrell, our Comptroller, who just completed his first year; and Jim Rose is the Executive Assistant to the Administrator for Federal Insurance. These are the people who really make things happen at FEMA.

As you have indicated, I would like to submit my detailed statement for the record and make a few brief remarks.

Senator PROXMIRE. Very good.

General BECTON. After almost 30 months at FEMA, I am convinced that we are carrying out our mission, which includes planning for protection of the people and resources of this nation as well as executing these plans in all types of emergencies. Over time, I believe that we have reestablished the integrity and credibility of the FEMA family and have demonstrated our competence and commitment outside the Agency, both to other federal activities and to the constituents we serve across the nation. With your help, we can continue to do this.

BUDGET HIGHLIGHTS

The total request for all appropriations, as you mentioned, is $698,396,000. The outlay request is $741,625,000. FEMA's full-time equivalent needs are estimated to be 2,498. Compared to fiscal year 1988, our requested appropriations increase by $66 million, outlays increase by $97 million, and the full-time equivalent increase by 59.

Consistent with the outcome of the recent congressional-administration budget summit negotiations, as well as the Gramm-Rudman-Hollings targets in 1989, FEMA's request maintains most programs at or slightly below the 1988 level. The major exceptions are the civil defense activity, where a $26.8 million increase is requested, and replenishment for the disaster relief fund, where an increase of $80 million is requested to maintain a level sufficient to preclude the necessity of requesting a supplemental for a "normal" year of disaster activity.

In addition to providing funding for implementing the President's civil defense policy, as outlined in National Security Decision Directive 259, the 1989 request again proposes policy initiatives for state and local cost sharing for stipends and elimination of U.S. Fire Administration activities that can be handled below the federal level.

The National Flood Insurance Program maintains the current initiative to be self-supporting while funding all costs associated with the program. Once again, funds are requested for the Emergency Food and Shelter Program to assist charities, other volunteer organizations, and local governments in feeding and sheltering the homeless.

The request also includes funds for various uncontrollable cost increases including the full-year cost of the January 1988 pay raise and funds for an anticipated increase in rental payments to the GSA.

CIVIL DEFENSE

Since coming to FEMA, I have worked very hard at making the civil defense program one that is credible to the American people, elicits support from FEMA's constituencies, and, in time of limited resources, uses taxpayers' dollars wisely. I believe that the program that we have presented to you in our 1989 budget accomplishes these goals.

The request of $160.4 million and 480 work-years implements the President's guidance as contained in NSDD 259—that is, the National Security Decision Directive—by improving civil defense capabilities with particular emphasis on state and local crisis management, more and better information for the public, and plans for a rapidly expanding civil defense capability during a crisis buildup.

FEMA develops and deploys civil defense systems in cooperation with state and local governments based upon their importance to national defense. Once developed, however, these systems can be used, should be used, and, in fact, are used in peacetime disasters and emergencies. Dual use of scarce tax dollars makes sense from every standpoint. It saves lives and property in natural and technological emergencies that threaten American lives nearly every week. In addition, using civil defense systems in real emergencies tests capabilities and improves their readiness.

In summary, FEMA proposes a realistic program to improve emergency preparedness starting in 1989 at a resource level of $160 million without any change in legislation. The program we are proposing will begin to meet the responsibilities of government as well as the expectations of the American people. It makes sense to states by striking the right balance between preparedness for a catastrophe we all hope will never occur and natural and technological disasters which do occur all too often.

If approved, this request will lay the foundation for steady progress in the out years. As in the past, I have asked my colleagues not to be reluctant to speak up when they have the requisite expertise in a particular area under discussion. I have also asked my colleagues to be brief.

One final comment before we respond to your questions, sir. I believe that great progress has been made over the last 3 years in building back confidence that FEMA programs are better managed and produce results. Credit for this accomplishment must be shared by the management team accompanying me today and a competent and motivated FEMA work force. Of course, we could not have succeeded without your support and the committee's support.

Thank you for the opportunity to appear before you, Mr. Chairman. We are ready for your questions.

[The statement follows:]

STATEMENT OF JULIUS W. BECTON, JR.

Mr. Chairman and Members of the Subcommittee:

We appear before you today to present testimony on the budget request of the Federal Emergency Management Agency (FEMA) for fiscal year 1989.

The total requested for all appropriations is $698,396,000. The outlay request is $741,625,000; and FEMA's full-time equivalent needs are estimated at 2,498. Compared to 1988, appropriations increase by $66,059,000, outlays increase by $97,869,000, and full-time equivalents increase by 59.

The 1989 budget request for FEMA's operating accounts is $418,396,000, an increase of $20,059,000 above 1988. An increase in Civil Defense is partially offset by decreases in other activities. The specifics of these changes are detailed in the Budget Justification.

OVERVIEW

Consistent with the outcome of the recent Congressional/Administration budget summit negotiations and the Gramm-Rudman-Hollings targets in 1989, FEMA's request maintains most programs at or slightly below the 1988 level. The major exceptions are the Civil Defense activity where a $26,821,000 increase is requested and replenishment for the Disaster Relief Fund where an increase of $80,000,000 is requested to maintain a level sufficient to preclude the necessity of requesting a supplemental for a "normal" year of disaster activity.

In addition to providing funding for implementing the President's civil defense policy as outlined in National Security Decision Directive (NSDD) 259, the 1989 request again proposes policy initiatives for State and local cost sharing for stipends and elimination of those U.S. Fire Administration activities that can be handled below the Federal level. The National Flood Insurance Program maintains the current initiative to be self-supporting while funding all costs associated with the program. Once again, funds are requested for the Emergency Food and Shelter Program to assist charities, other volunteer organizations and local governments in feeding and sheltering the homeless. The request also includes funds for various uncontrollable cost increases including the full year cost of the January 1988 pay raise and funds for an anticipated increase in rental payments to the General Services Administration.

CIVIL DEFENSE

The request for Civil Defense Programs is $160,393,000 and 480 workyears, an increase of $26,821,000 over the 1988 current level. The requested increase implements the

President's guidance as contained in NSDD 259 by improving civil defense capabilities with particular emphasis on State and local crisis management, more and better information for the public, and plans for rapidly expanding civil defense capabilities during a crisis buildup.

FEMA develops and deploys civil defense systems - in cooperation with State and local governments - based upon their importance to the national defense. Once developed, however, these systems can be used, should be used, and are used in peacetime disasters and emergencies. Dual use of scarce tax dollars makes sense from every standpoint: it saves lives and property in natural and technological emergencies that threaten American lives nearly every week. In addition, using civil defense systems in real emergencies tests our capabilities and improves their readiness.

A new emphasis in NSDD 259 is to develop plans and preparations in peacetime for expanding civil defense by "surge" actions. The purpose of this approach is to defer as many costs as feasible to a time of rising tension, as opposed to developing standing capabilities in peacetime. Our aim is to identify and develop a base from which shortfalls can be made good, to the extent that time allows, by surge actions.

To surge civil defense elements would require perhaps two to twelve months, less time needed to improve some elements, more for others. However, some systems like the National Attack Warning System or protected stations of the Emergency Broadcast System are not "surgeable" and must be in place. These systems, of course, also contribute to the protection of the people in peacetime disasters and would not be in existence today, were it not for the civil defense program.

NSDD 259 stresses the dual-use benefits of civil defense by directing that the program "...continue to support all-hazard integrated emergency management at State and local levels, to the extent that this is consistent with and contributes to preparedness of the nation in the event of an attack...." The NSDD also gives priority emphasis to two general areas which have the highest payoff for saving lives in both peacetime and attack emergencies.

The first priority area is State and local crisis management. This means improving the survivability of State and local governments, as they will be able to support and assist people in an attack emergency just as they do today in responding to a tornado, hurricane or other natural or technological disasters. To do this, governments must be able to remain in operation so they can transmit warning; broadcast lifesaving information; direct operations such as rescue, firefighting and debris removal; and communicate with other governments to request or offer help. Major program elements involved include warning systems, protected radio broadcast stations, and emergency operating centers or EOC's, and a minimum, essential system of radiological defense personnel and instruments. The disaster at Chernobyl underlined what we have been stressing for years: instruments are essential to assess a radiological hazard. Research and development in 1988 and prior years has provided the basis for procurement of a limited number of radiological instruments for the crisis management requirements of State and local governments. This has provided the groundwork to allow the development, starting in 1989, of a base for mass production during a surge period of the far larger number of instruments which would be needed by the population during the shelter and post-shelter periods. We are also providing training for a limited number of radiological defense personnel in peacetime plus developing a base for training over 1.5 million additional radiological monitors who would be needed during a surge period.

The second priority specified by NSDD 259 is improving population protection capabilities, including emergency planning as well as information for citizens on what they must do to lessen their chances of injury or death in emergencies of all types. Action by an informed citizenry is the bedrock foundation of all civil defense programs. This is true in countries such as Switzerland, Denmark or the Soviet Union with large in-place programs, and is even more important in a program like the one we are proposing.

In an attack, for example, your odds for survival would depend greatly on your knowing what to do and taking prompt action. You would need to know about blast and fallout, how existing homes and larger buildings can provide - or be altered to provide - fallout protection, and what to take to a shelter. Most people do not give much thought to such matters in normal times - but when international tensions rise, the public demands survival information. We saw this phenomenon dramatically illustrated during the Cuban missile crisis in 1962. People did not panic, but they did demand answers from the government to practical questions like, "Where can I find a shelter for myself and my family?" More recently, when Afghanistan was invaded, our normal two-year supply of radiological defense manuals was exhausted in 30 days due to citizen demand.

Although we know correct action by citizens could save millions of lives in an attack, this Government's present capability to provide attack-related emergency public information is nearly nil. Therefore, our 1989 request stresses the development of standby materials to be disseminated by the mass media during a crisis when we know they will need - and demand - such information.

A related initiative specified by NSDD 259 is volunteerism - to encourage citizens to help prepare themselves, their families, and their communities for emergencies of all types, including attack. Many communities now make good use of volunteers in their civil defense programs and in peacetime disasters, and we believe this can and should be extended to many more.

In summary, FEMA proposes a realistic program to improve emergency preparedness starting in 1989, at a resource level of $160 million. The program we are proposing will begin to meet the responsibilities of government as well as the expectations of the American people. It makes sense to the States by striking the right balance between preparedness for a catastrophe we all hope will never occur, nuclear attack, and the natural and technological disasters which do occur all too often. If approved, this request will lay the foundation for steady progress in the outyears.

EARTHQUAKE AND OTHER HAZARDS

The request for Earthquake and Other Hazards is $9,121,000 and 61 workyears, a decrease of $293,000 and an increase of 4 workyears from the 1988 current level. The title of this activity has been changed from Comprehensive Emergency Preparedness Planning, principally to highlight FEMA's activities under the National Earthquake Hazards Reduction Program.

The Earthquake and Other Hazards activity is designed to enhance State and local capabilities to prepare for, respond to, and mitigate disasters and emergencies arising from earthquakes, hurricanes, hazardous materials incidents, and unsafe dams. Incidents such as the chemical plant accident in Bhopal, India, and the earthquake in Mexico City continue to highlight the importance of preparation for disasters and emergencies arising from natural and man-made causes.

The 1989 program features a 75 percent Federal/25 percent State cost share of financial assistance in the Earthquake program, which will emphasize the application of mitigation techniques. This proposal is consistent with the Administration's emphasis on deficit reduction and with authorization received from the Congress pursuant to the recently enacted Authorization Act for the National Earthquake Hazards Reduction Program (Public Law 100-252), which includes a provision for cost sharing.

RADIOLOGICAL EMERGENCY PREPAREDNESS

The request for Radiological Emergency Preparedness is 70 workyears and $7,340,000, a decrease of 10 workyears and $1,339,000 from 1988. The Administration intends to propose legislation to collect fees from the commercial nuclear facilities for 55 percent of the FEMA costs associated with offsite emergency planning. The fees to be collected would be reimbursed to the Treasury and therefore would not affect this appropriation request. These fees would be collected at the same rate and deposited in the same manner that is proposed for the recovery of the costs of the Nuclear Regulatory Commission.

FEDERAL PREPAREDNESS

The request for Federal Preparedness is $179,825,000 and 947 workyears, a net decrease of $3,935,000 and an increase of 70 workyears over 1988. The major portion of the workyear and concomitant Salaries and Expenses increase is in the Government Preparedness program. This increase is offset by a reduction in program funds in this same program.

Included in the request for the Federal Preparedness activity is a new initiative entitled National Security Emergency Preparedness (NSEP). This new program is designed to develop timely, effective and predictable Federal government response to large-scale emergencies. In 1989, this program will focus on:

o developing new plans and procedural documentation to replace obsolete national security emergency plans.

o developing an implementation plan for the coordinating structure for national security emergencies, including rostering, training, exercising, and evaluation;

o providing adequate staff support for coordination and liaison with all Federal departments and agencies; and

o developing new regional plans and operations documents.

Finally, the 1989 request reflects the transfer of all stockpile functions to the Department of Defense.

TRAINING AND FIRE PROGRAMS

The request for Training and Fire Programs is $15,724,000 and 97 workyears, a decrease of $3,990,000 and 1 workyear. As discussed below, this reduction reflects the first year of a three-year phase in of increased cost sharing by State and local governments and volunteer organizations for training their employees and members at the National

Emergency Training Center. In addition, the request includes the elimination of funding for fire prevention and arson control because these activities can be handled below the Federal level.

United States Fire Administration

In the 1989 request, funds are provided for those functions in which there is a Federal role. For example, 1989 funds will support undertaking new fire service management initiatives; achieving a closer working relationship between the fire service and public management; continuation of public/private partnership efforts; studying the adequacy of fire apparatus operator training; additional research to develop superior protective clothing, tools and equipment to allow firefighters to operate more safely and efficiently in emergencies; continuation and expansion of the National Fire Incident Reporting System; and analysis of selected fire department operations. The 1989 request proposes eliminating funding for fire prevention and arson control activities which can be handled below the Federal level.

Cost Sharing for Training

For 1989, FEMA again proposes that State and local governments and volunteer organizations begin to assume a greater "partnership" in the "Federalized" emergency management program by paying a larger share of the costs for providing training to their employees and members at the National Emergency Training Center. A three-year phase-in period, rather than an abrupt elimination of current levels of financial support to offset the expense of attendance, is incorporated in the proposal to allow time for organizations to plan and budget for the expense of attendance of their students. In the first year of the three-year initiative, State and local governments and volunteer organizations will pay a portion of the travel costs for their students to attend the Emmitsburg campus. By the third year, FEMA proposes that the State and local governments and volunteer organizations pay the entire cost of travel for each student. Currently, the student's sponsoring organization pays the cost of meals as well as the salaries and benefits for attending students and any replacement personnel necessary to maintain minimum staffing levels. The Federal government will continue to pay all other costs of the on-campus and resident programs at Emmitsburg including faculty and staff salaries, course materials, course development, site administration, etc.

FLOOD PLAIN MANAGEMENT
AND
NATIONAL FLOOD INSURANCE FUND

In 1989, FEMA will again operate a self-supporting National Flood Insurance Program while funding the Flood Plain Management Program and the administrative costs associated with the National Flood Insurance Fund. The recently enacted Housing and Community Development Act of 1987 (Public Law 100-242) authorized a ten percent increase in premiums in 1988 and 1989.

FEMA is implementing the ten percent increase for 1988 but proposes only a five percent increase for 1989. Based on current analysis of historic loss experience, five percent will be adequate to achieve the goal of self-supporting for the average loss year. The estimated five percent rate increase does not include any potential impact resulting from the erosion provision of Public Law 100-242, either for its trial period or if it becomes a permanent part of the program. Should there be any significant increase in claims as a result of this new provision, a greater than five percent rate increase may be necessary to maintain the self supporting status.

FEMA will continue to work with the private insurance industry, through the Write-Your-Own program, as the most effective means of promoting the sale of flood insurance policies, providing improved service to insurance agents and brokers, and improved claims service to policy holders should a catastrophic flooding event occur.

MANAGEMENT AND ADMINISTRATION

The request for Management and Administration is $36,163,000 and 381 workyears, an increase of $3,153,000 and 8 workyears over 1988. The increase includes funds for various uncontrollable cost increases, such as rental payments to the General Services Administration, and 14 workyears and $420,000 to support an intern program designed to provide a rational employee replacement system in FEMA.

NATIONAL INSURANCE DEVELOPMENT FUND

The recently enacted Housing and Community Development Act of 1987 (Public Law 100-242) authorized the crime insurance program through September 30, 1989 and also authorized premium increases of five percent in 1988 and 1989. The Administration's budget for 1989 is consistent with that Act, since it implements five percent rate increases in both 1988 and 1989 to lessen the burden on Federal taxpayers. Approximately $1,400,000 per month of taxpayer subsidy will be required to support the program's fewer than 30,000 policies through 1989. FEMA will seek repeal of the program so that it will not continue after September 30, 1989.

DISASTER RELIEF

The 1988 appropriation request of $200,000,000 assumes an obligational level of $220,000,000 or a $30,000,000 reduction in the level previously used for average annual disaster activity. FEMA intends to pursue measures to achieve this reduction through more efficient disaster processing which would reduce overhead costs and through increased hazard mitigation measures and incentives for greater insurance coverage.

These measures will not reduce benefits to disaster victims. The obligation level assumes a carryover of approximately $49,000,000 from fiscal year 1988. The level of disaster activity thus far in fiscal year 1988 has been fairly high; so the amount of carryover will be dependent on activity during the balance of the fiscal year.

EMERGENCY FOOD AND SHELTER

FEMA is requesting $80,000,000 to continue to channel emergency support to feed and shelter the homeless through the National Board of major private charities. With funding for regular programs authorized under the Stewart B. McKinney Homeless Assistance Act, it is anticipated that the need for FEMA emergency funding will decrease to previously appropriated levels.

Thank you, Mr. Chairman. My staff and I will be pleased to answer any questions.

GAO REPORT ON CIVIL DEFENSE

Senator PROXMIRE. Thank you very much, General, for a very competent summary. You are requesting $132 million for the civil defense fund. That is an increase of $25.9 million over the current year funding. In December 1987 a GAO report on the management controls FEMA has on civil defense funds identified problems with management controls at all levels. Headquarters problems identified included the transfer of funds to a central account and then loss of their specific identity in the end-of-year adjustments and questionable procurement actions.

What steps are you taking to address the management control problem?

General BECTON. First, sir, I would like to, if I could, correct that number. I think you said $132 million. Should it be $160 million?

Senator PROXMIRE. You are requesting $132 million, not including salaries and expenses.

General BECTON. We have certainly read with great interest the GAO report. We have commented on it. We have tightened up in many areas on how we are spending the money. I would like for my Associate Director, who heads that specific area, to make further comment. But I would add one other thing: We also are very sensitive to complying with the GAO comments pertaining to using the funds according to the intent of Congress.

Mr. PETERSON. Thank you, sir.

Senator, there are really three areas that I think are appropriate to bring up in this discussion that the GAO report mentioned. The first was monitoring state expenditures; the second was requiring states to report property purchases made with federal funds; and the third was awarding the funds to states based on the review of statements of work.

We have specifically identified all three of those areas in our overview, and I can go into substantial depth on all three if you would like. The first one, monitoring of state expenditures, I believe, speaks more to the issue. We have put in place a number of fiduciary controls that have been instituted by our headquarters and are being implemented by the regions.

They include, for example, monthly lapsed fund reports; monthly updated reports on funds and awards; monthly cash management reports on states' letters of credit; and periodic training on how to prepare financial status reports, SF 269's, financial status report, covered in sections of our comprehensive cooperative agreement, the management courses offered in the NETC.

All of these are being utilized to——

PROGRAM IDENTITY OF CIVIL DEFENSE FUNDS

Senator PROXMIRE. Let me just interrupt to say that my question related to a transfer of funds to a central account and then a loss of their specific identity in the year-end adjustments. Have you changed your accounting procedures so that you can identify those?

General BECTON. Sir, if I may, maybe my Budget Officer can be more specific.

Ms. JACOBIK. The funds never lost their program identity. In our FEMA account structure, we have what we call a program code. The program code stayed the same.

Senator PROXMIRE. Give me an example.

Ms. JACOBIK. For example, the program code for emergency management assistance is 1110. All we did was change the organization code. We were experiencing a tight funding situation at the time. We changed the organization code to be 0501 instead of being——

Senator PROXMIRE. Then GAO was wrong in saying that you lost your specific identity; you did not?

Ms. JACOBIK. We did not lose our program identity, only the organizational identity.

Senator PROXMIRE. Because you had an opportunity, I take it, to comment on the GAO report?

General BECTON. Yes, we did.

Senator PROXMIRE. Here is what they said in Appendix II:

> Lack of documentation on whether or how funds were spent affects FEMA's ability to comply with congressional committee restrictions on reprogramming. Senate Report 98-506 directs FEMA to notify the chairman of the Senate Appropriations Committee of the reallocation of civil defense funds over $250,000 to other programs.

Was that done?

Ms. JACOBIK. The funds never did lose their program identity.

Senator PROXMIRE. Go ahead, Tom.

Mr. VAN DER VOORT. You disagree that there is a lack of documentation on whether funds were spent?

Ms. JACOBIK. We disagree with that finding.

Senator PROXMIRE. At the time that that was submitted to you, did you tell them that you disagreed with that finding?

Ms. JACOBIK. Yes. We had many discussions on that, and GAO never seemed to understand that the program code was maintained and that all we did was assign the organization code to a central account rather than to the program offices themselves.

Mr. PETERSON. Sir?

Senator PROXMIRE. Yes, sir?

Mr. PETERSON. That is one of the reasons I was bringing up the monitoring by headquarters—through the state and the region—and tracking all of those moneys through the retraining programs that we are doing, to emphasize, through our structure, the cash control and the category control must be consistent throughout the operation. We have looked at that, sir, to try to make sure we have got a grip on it.

Mr. ORRELL. Senator, I might add, also——

Senator PROXMIRE. Identify yourself, sir, for the record.

Mr. ORRELL. I am George Orrell, the Comptroller.

Senator PROXMIRE. Yes, sir.

Mr. ORRELL. Since that time, GAO has acknowledged that the controls we have put in place, concerning the item discussed, meet their approval. At the end of the report, they make no recommendations about that matter at all. In fact, the last sentence indicates:

> We believe FEMA's actions represent the effort necessary to correct weaknesses that we identified in our review.

The fact of the matter is that along the way, every response that was necessary, we coordinated with both the House and the Senate, and we have been, in the last several years, very careful to reprogram according to the Senate's guidance.

COMPETITION FOR PROCUREMENT ACTIONS

Senator PROXMIRE. Let me ask another question along that same line. GAO also cited several incidents of FEMA's questionable handling of procurement actions:

> FEMA often made limited efforts to identify alternative sources for contracts to ensure adequate competition. Furthermore, justification for sole source awards was inadequate.

Can you tell us what plans you have to correct that situation, or do you deny that it was inadequate at FEMA?

General BECTON. No; I think we have acknowledged that we were not doing as well as we should have been doing. We have now set up a person who is an advocate inside acquisition management to monitor to make sure that we don't repeat those kinds of things.

Chief, is there anything else I could mention?

Senator PROXMIRE. Who is in charge of that, making sure that you——

General BECTON. My Office Director in Acquisition Management, and my Deputy Director also monitors.

Senator PROXMIRE. So that you are both satisfied that you have taken action to ensure competition will be possible?

General BECTON. Yes. As a matter of fact, I think that we can stand and be very proud of our record on sole source in terms of numbers.

Senator PROXMIRE. For the record, will you give us the details on that?

Mr. TIDBALL. Yes, sir.

[The information follows:]

COMPETITION IN CONTRACTING

Details of changes in Acquisition Management procedures to improve competition in contracting, along with statistics for past few years:

The Agency's Competition Advocate was designated on January 11, 1985. Additional steps taken during the last three years towards improving competition in the Agency are summarized as follows:

(1) FEMA Instruction 1610.5 - Procurement Review Board/ Procurement Planning System was revised on August 15, 1985, to implement the review of every proposed sole source procurement during the procurement planning stage of the requirement and the review and approval of all requisitions for sole source contracts over $100,000.

(2) The Agency's Project Officer training was revised, and a portion developed for the mini-project officer briefing provided to Agency management, to include and communicate the Competition in Contracting Act (CICA) emphasis concerning competition.

(3) In an effort to identify new sources, the Office of Acquisition Management has developed procedures to circulate throughout the agency, and maintain, vendor capability statements. In addition, the Director of the Agency provides a monthly briefing on FEMA's programs and we encourage contracting officers and program managers to regularly meet with firms interested in doing business with FEMA.

(4) For the past three years the Competition Advocate has established competition goals and monitored them on a directorate by directorate basis. The chart below depicts the statistics for FEMA contracts over $25,000 awarded competitively for FY 85 - FY 87.

	No. of Actions Competitive	% of Total Actions	No. of Actions Non-Comp.	% of Total Actions
FY 85	508	77.3%	149	22.7%
FY 86	607	88.9%	75	11.1%
FY 87*	428	90.1%	47	9.9%

	Dollar Obligations Competitive	% of Total Dollars	Dollar Obligations Non-Comp.	% of Total Dollars
FY 85	$143,997,587	85.4%	$24,656,634	14.6%
FY 86	$155,969,990	85.0%	$27,548,392	15.0%
FY 87*	$169,302,038	86.0%	$28,139,001	14.0%

* Does not include 8A Awards which total 56 Actions for $5,810,039.

PROTOTYPE EMERGENCY OPERATING CENTER

Senator PROXMIRE. You are requesting $10.7 million for state and local direction, control and warning. That is an increase of 178 percent. A large part of that increase, $3.7 million, can be found in the emergency operating centers request. According to your justification, the increase for grants to states will permit FEMA to, and I quote now:

> . . . implement elements of the national/state EOC network by the further development or enhancement of state EOC's consistent with the criteria which will be developed from the 1988 prototype.

General Becton, what criteria will the prototype produce that will result in a $3.7 million increase in the cost of running state EOC's?

General BECTON. Sir, a few states have come up to the standards that are required for an EOC to be effective. We do have the state identified to be a prototype example.

STANDARDS FOR EMERGENCY OPERATING CENTERS

Senator PROXMIRE. Just for example, I pick one out of the air, and I don't know why I pick it, but take Wisconsin. [Laughter.]

General BECTON. Yes, sir.

Senator PROXMIRE. Have they come up to the standard?

General BECTON. I don't believe they have.

Mr. PETERSON. I would have to look to the record for Wisconsin, specifically, but there are only approximately seven states that currently meet all of the requirements for emergency operating centers, sir.

Senator PROXMIRE. Why is that? We have 43 states that don't do it. Why?

Mr. PETERSON. We have 43 states who do not meet all of the elements within the emergency operating center criteria. An example, sir, would be the ability to have external power that would operate for 14 days. Another example could be the ability to withstand electromagnetic pulse so that their very expensive communication systems would be able to function under certain catastrophic events.

So it is the extended capability for the command and control people to function during a catastrophic event, sir.

Senator PROXMIRE. Just as an example, will you let me know in detail for each of these where Wisconsin is not meeting its requirement?

Mr. PETERSON. Absolutely. Yes, sir; I would be pleased to do that.

[The information follows:]

WISCONSIN—EOC REQUIREMENTS

The requirements FEMA has established for federal funding assistance eligibility are consistent with what we believe are necessary operational requirements for an efficient, effective EOC. The information provided by Wisconsin indicates that the state EOC has the following deficiencies:

1. Does not have an independent 14-day water supply.
2. Does not have a two-way radio link with the primary emergency broadcast system [EBS] station.
3. Does not have a two-way radio link with the secondary EBS station.
4. Does not have a two-way radio link with political subdivisions in the state.

USE OF EMERGENCY OPERATING CENTERS

Senator PROXMIRE. General Becton, last year you and I discussed the lengthy issue of FEMA's building emergency operating centers for public officials.

General BECTON. Yes, sir; we did.

Senator PROXMIRE. According to last year's hearing record, the EOC's will not be used exclusively for public officials but rather for, and I quote:

> . . . police, fire service, and public health professionals, communication technicians, and a radiological analyst trained to assess the radiation hazard and prepare advice to broadcast to the people on how to avoid radiation sickness or death.

If we are subjected to a nuclear attack, who will be left to receive that advice outside of the officials and supporting personnel of the emergency operating centers?

General BECTON. Sir, I think we all recognize that if we are at ground zero, we are not going to survive. Someplace beyond ground zero, people are going to survive if they have taken proper precautions; if they have taken precautions against fallout, as an example.

There will be people who are going to survive in a nuclear attack here or any place else. It is those people that we are primarily concerned about, that we can get emergency information out to them. We can tell them what the status of the fallout cloud is.

SURVIVAL FROM NUCLEAR ATTACK

Senator PROXMIRE. I wonder how many that would be. I notice that the latest estimate is that the Soviet Union has 12,000 nuclear weapons that could reach our cities. Some of them are so enormous they could destroy an entire huge metropolitan area; some are smaller. If you take the 12,000th smallest city in the country, it is located in Mississippi, and it has about 650 people.

If they hit 12,000 of our cities and leave only those cities that had populations of less than 650, it is not going to be an awful lot of people out there to benefit from this, whatever the protected officials are telling them.

General BECTON. Sir, I obviously am not in the position to debate the number of nuclear rounds that the Soviets could throw at us or that we could throw at them. I am concerned, however, that we should be doing what we can to protect the population.

Today is the second anniversary of Chernobyl. I can imagine another Chernobyl, possibly. We wouldn't like to see it, but if one were to come, and if we were in the way of such a nuclear radiation cloud coming toward us, that emergency operating center would be very important, because there are only two ways we can protect our population. We said last year, and we are saying again this year, that you can give them shelter or you can evacuate. We know of no other way, and we need people who are in a position to assist—not just the fire chief and the radio operator and folks like that, but people involved in public works; people who are responsible for the electrical infrastructure, the water system. Those folks have got to have some protection so that they can be able to assist the population, those that will survive.

NUCLEAR WINTER

Senator PROXMIRE. Last year you indicated a study at Oak Ridge National Laboratory that was examining, and I quote:

> . . . The impact of nuclear winter on current civil defense policies and protective measures if it is confirmed that nuclear autumn or nuclear winter is likely.

What were the results of that study?

General BECTON. Mr. Peterson?

Mr. PETERSON. The results of the study basically said that it is much more likely that we would have a short nuclear autumn than a nuclear winter, sir.

Senator PROXMIRE. What would be the action that would be required to be taken if we had a short nuclear autumn. That is correct, incidentally. I was one of those that felt that nuclear winter may have the catastrophic effect of wiping out the human race. I think that the more thoughtful detailed scientific analysis indicate that that isn't the case.

I think you are right, that a short nuclear autumn is more likely. But even that could have catastrophic results in the world's food supply.

Mr. PETERSON. It certainly could, sir. If I could personalize it for a moment, sir, I come from local government. I spent the last 5 years as a county commissioner, and I have worked at emergency operations centers during the past 12 months. One of the functions of the emergency operating center is to carry out plans that would meet such issues as you have identified.

Out in Washington State, we look a little differently at the question of food supply, when you drive down by Ritzville and they have mountains of wheat stacked 400 and 500 feet tall. But it is important that the emergency operating centers and the command and control people have the ability to identify where that food is stored and identify the transportation needs to move it. That is part of the final process, and part of the funds we provide for locals and states are to use for those types of final processes.

Senator PROXMIRE. What are you going to do about it? How will the study affect the current civil defense policies?

Mr. PETERSON. At the current time in this budget, we have not identified a major change of thrust other than to increase the infrastructure; in other words, EBS capabilities, communication capabilities, and the planning capabilities and enhancement of emergency management at the local level so that they can better deal with the issues at a local level.

CIVIL DEFENSE VOLUNTEERS

Senator PROXMIRE. You are requesting $14 million for population protection, an increase of $2.9 million. Your request includes $1.3 million for family protection. Late last year you requested $2.5 million for that program element, but the funds were not provided.

I understand that the program's objective is to encourage and support voluntary participation by citizens in all hazard community civil defense activities through self-help pamphlets, videotapes, and other educational materials.

How many volunteers will be taking part in this effort?

Mr. PETERSON. The program is only in the formative stages and only in the planning process, sir. I cannot give you a specific number of how many people would respond, seeing as how we have not had funding in this area for a long period of time. The last funding in informational categories was 1984, and we did find that there was substantial demand for information at that time, sir.

Senator PROXMIRE. In the meanwhile, my feeling, and this could be wrong, but my feeling is that there is probably less sensitivity to the situation than in the past 3 or 4 years. In view of the progress being made on nuclear disarmament, as well as the general feeling of citizens that self-help against nuclear attack is next to hopeless, what makes you think there is enough of a sense of urgency to make the program work?

PUBLIC INFORMATION

Mr. PETERSON. Of course, sensitivity to issues waxes and wanes by national events. An example, sir, would be when Afghanistan was invaded; I did some research, and we found that 2½ years' worth of information made available for the public was consumed within 2 months. That base has never been replenished.

In addition, I would like to assure you that we are responding to NSDD 259, in addition to dealing with all hazards covering earthquakes, hurricanes, tornadoes, and general information for the populace. So we are not just limiting this to nuclear attack, sir.

Senator PROXMIRE. I think that is very wise. I think the more practical and likely is against the natural disasters you talk about.

General BECTON. Sir?

Senator PROXMIRE. Yes, sir, General.

General BECTON. Sir, if I may point out, that in addition to the Afghanistan situation, when it hit, we basically depleted our stockpile of material.

Senator PROXMIRE. How big was that stockpile? That doesn't necessarily mean that there would be a big demand, does it? You have a few thousand pamphlets?

General BECTON. Can anybody answer that, the number of pamphlets? We will get that for the record.

[The information follows:]

NUMBER OF PAMPHLETS DISTRIBUTED

At the time of the Soviet invasion of Afghanistan, demand for the basic FEMA booklet H-14, "In Time of Emergency" rose to a level which completely depleted FEMA's on-hand stock of more than 200,000 copies in a single month.

I would also point out that the same thing happened with the Cuban crisis.

Senator PROXMIRE. The Cuban crisis was, it seems to me, tremendously more threatening than the Afghan situation.

General BECTON. That is true, but when the American public get concerned, they ask for information that they volunteer to photocopy. As Grant pointed out, we publish all kinds of material on hurricanes, earthquakes, and tornadoes; and these materials are available to the public.

PROTECTION FOR THE AVERAGE CITIZEN

Senator PROXMIRE. Let me ask you this. If I, as an average citizen, would ask you how to protect my family against nuclear attack, what advice would you give me?

General BECTON. I would suggest several things, and I would look to the experts, again. Find out if your community has an evacuation policy; and if so, where the destination is. If you do not have an evacuation policy, I would work very hard to get one if I felt I was in a target area.

Senator PROXMIRE. Anybody in a big city or in any city is likely to be in a target area.

General BECTON. In most of them. I say most of them; in many. We have also got fallout shelters. Find out where the nearest fallout shelter is. We have a civil defense program within the community for fallout.

EVACUATION OF CITIZENS

Senator PROXMIRE. How about evacuating a large city? Wouldn't you have a fantastic traffic jam?

General BECTON. Sir, we evacuate cities almost every year. I can recall doing it in 1985. During Hurricane Gloria, we had 1.4 million people evacuate from the east coast. In another hurricane we had——

Senator PROXMIRE. 1.4 million from the east coast; the east coast has, what,100 million people on it?

General BECTON. In more specific areas. We didn't evacuate Washington, but they sure moved out of places along the coasts of North Carolina and South Carolina.

Senator PROXMIRE. I am sure they did. If you have a nuclear attack, everybody would want to get the dickens out of there.

ATTACK WARNING

General BECTON. I would also trust that we are going to have adequate warning. If you are saying this is going to come as a bolt out of the blue, like tomorrow morning, I don't believe that. I believe that we have sufficient——

Senator PROXMIRE. Would you have a warning more than the length of time it takes for a missile to go from the Soviet Union to here, which isn't very long, half an hour? That would be one terrific traffic jam.

General BECTON. I will defer that answer to the Department of Defense. From my experience in wearing a uniform for 40 years, I am convinced that we have sufficient forces in place so that we would not have that 30-minute warning; we would have much more than that.

PROBLEMS WITH DOSIMETERS

Senator PROXMIRE. Your request for radiological instrumentation is $10.7 million, an increase of $3.9 million over current year funding. I am interested in the pilot production of the carbon fiber dosimeter at the William Langer Jewel Bearing plant in Rolla, N. Dak. According to FEMA's Quarterly Progress Report No. 1 for fiscal 1988, and I quote:

> Pilot produced instruments still do not meet military specification limits for electrical leakage after high radiation.

The report goes on to say, and I quote again:

> The optical characteristics of the high-range dosimeter are not satisfactory.

This is the latest in a series of reports that list major development problems. When do you expect those deficiencies to be ironed out?

Mr. PETERSON. There are three basic dosimeters we are dealing with. We expect all of those errors and problems to be rectified through the research and development program not later than June 1989. At that point in time, we will have completed all research and development, made the appropriate changes necessary in those dosimeters to begin to develop the engineering stats that will allow us to capitalize off the investment that you have given us—approximately $4.5 million in research and development—and be able to go to limited production.

INSTRUMENTATION COSTS IN 1988 AND 1989

Senator PROXMIRE. How much do you intend to spend in fiscal 1988 and 1989 on that particular project?

Mr. PETERSON. In 1989?

Senator PROXMIRE. 1988 and 1989.

Mr. PETERSON. Together, let's see. I would have to add the 1988 figure. The sum of $3.3 million will finish off the very tail end of R&D, research and development, and would be utilized for developing the engineering stats which would go to the public bid to get the best possible manufacturing costs for dosimeters in establishing the surge base.

Senator PROXMIRE. Are you ready to suspend operations at any point if those goals are not reached?

Mr. PETERSON. We would suspend operations if the quality control and the engineering specs were not met; you bet. That is correct, sir.

INCREASE IN FLOOD INSURANCE RATES

Senator PROXMIRE. I received a copy of a letter, General, submitted to FEMA that responded to the Flood Insurance Administration's proposal to increase flood insurance rates. I take a special interest in the letter because it came from the state of Wisconsin's Department of Natural Resources.

General BECTON. Yes, sir.

ENFORCEMENT OF FLOOD INSURANCE PURCHASE REQUIREMENTS

Senator PROXMIRE. The state of Wisconsin recommends that FIA should look to other methods to increase revenues instead of relying solely on rate increases. One suggestion is to emphasize enforcement of the requirement that insurance be purchased by all who live in a flood plain. What efforts do you currently make to enforce insurance purchase requirements?

General BECTON. Sir, as you know, the administration is trying to make the flood insurance program self-supporting, which is why we have requested a rate increase. We, in FEMA, are not a regulatory agency. I would like to turn to my Federal Insurance Administration person for the rest of that answer. Jim Rose will speak to that, Senator.

Mr. ROSE. Senator, we thoroughly agree with the suggestion that enforcement of the National Flood Insurance purchase requirement is a most effective way of increasing the number of flood insurance policies. As the Director has pointed out, it is the federal instrumentalities which enforce the rules by requiring the banks to comply with them.

However, we have had 183 lender workshops in 1987. I have had the opportunity of meeting with representatives of each one of the federal instrumentalities to focus their attention on the purchase requirements and also develop for them some language which will assist them in understanding more thoroughly how those requirements work.

I am convinced that the instrumentalities are focusing more clearly on this and recognize their responsibility.

Senator PROXMIRE. Your answer to the Wisconsin people would be that we don't have the enforcement requirement in the law now? You have to change the law to mandate that the people who live in the flood plains buy insurance?

Mr. ROSE. The statute falls directly upon the instrumentalities. The instrumentalities issue rules, and it is those rules which govern the lending institutions. Therefore, if a bank fails to require the purchase of flood insurance, that bank is in violation of the rule of that instrumentality, and only that instrumentality can enforce its own rule.

Senator PROXMIRE. I am not sure I follow you. What do you mean by instrumentality?

Mr. ROSE. The 1973 Flood Disaster Protection Act orders the instrumentalities such as the Federal Deposit Insurance Corporation, Comptroller of the Currency, Federal Home Loan Bank Board, to issue rules which, in turn, require the lenders, which are subject to their jurisdiction, to cause borrowers to buy flood insurance. There is no statute which directly falls upon an individual lender, but rather upon the instrumentality.

The responsibility of a bank is to meet the requirements of the instrumentality—for example, the FDIC—if its deposits are insured.

Senator PROXMIRE. So you say it is those regulators, the FDIC and the Comptroller of the Currency and the Federal Reserve Board, too, I presume—they regulate the state member banks—could require the banks as a means of being sure they get the insurance to——

Mr. ROSE. Those instrumentalities by the 1973 Act, are, in fact, required to issue such rules. The law already requires the instrumentalities to compel the lenders to make the borrowers procure the flood insurance.

Perhaps what is needed is more aggressive enforcement on the part of the instrumentalities with respect to their own rules, and it is with that area that we have been assisting.

Senator PROXMIRE. Give me as much as you can. I am in a good position to write them. I am chairman of the Banking Committee. I will be happy to get in touch with these regulators and see why they haven't enforced the law.

Mr. ROSE. We would be happy to follow up on that.

GAO REPORT ON WEST VIRGINIA FLOOD

Senator PROXMIRE. General, you are requesting $200 million for disaster relief, an increase of $80 million over current year funding. In February 1988, the General Accounting Office released a report on FEMA's response to West Virginia's November 1985 flood. GAO found that less than half of West Virginia's 55 counties took part in FEMA's program to improve local emergency operation.

Furthermore, and I quote:

> State officials told GAO that some counties that are currently participating may withdraw because of the program's paperwork demands on part-time and volunteer local staff.

GAO recommended that FEMA, in conjunction with the states, determine whether an interstate regional merge operation planning is feasible and potentially more cost effective than the current method of having each county develop its own plan. How do you respond to that?

General BECTON. Sir, I would like to again turn to the Program Manager for that.

Mr. PETERSON. I am going to ask my Deputy to respond to that, because I am not totally familiar with that.

David?

Mr. MCLOUGHLIN. Senator Proxmire, we clearly have always supported and urged people to do interregional planning, be it county, two counties, county level, or several cities put together.

The decision on what jurisdictions will actually do the planning is not a federal decision. It is a decision of each state: how they are organized, how they plan to be organized. We clearly would support West Virginia, particularly in the rural parts of the state, doing larger based planning, that is, either multicounty or on a county basis. We cannot require that, though, from a federal standpoint.

Senator PROXMIRE. Do you think you should have the authority to require that? Should we change the law to provide that you should have that authority, do have that authority?

Mr. MCLOUGHLIN. Senator, generally speaking, I think that would not be a wise idea. It may help us in a few instances like West Virginia.

Senator PROXMIRE. Is there anything short of that that we could do to encourage the states to act?

Mr. McLOUGHLIN. I don't know of anything short of that, but clearly, in most states, it is being handled, I think, rather well by the states themselves making the decision.

OVERHEAD COSTS IN DISASTER RELIEF

Senator PROXMIRE. Your disaster relief request for $200 million assumes savings of $30 million through legislative and administrative reforms. You indicated in your opening statement that you hope to achieve $30 million in savings through more efficient disaster processing, which would reduce overhead costs.

General BECTON. Yes, sir.

Senator PROXMIRE. Can you tell me what percentage of your disaster relief budget currently is spent on overhead costs?

General BECTON. May we provide it for the record?

[The information follows:]

ADMINISTRATIVE COSTS

During fiscal year 1986, disaster relief overhead costs constituted 6 percent of total President's fund expenditures. In fiscal year 1987, the overhead amount was 11 percent of total expenditures.

SAVINGS IN DISASTER RELIEF

Senator PROXMIRE. All right. What sort of an overhead cost percentage are you shooting for, and what sort of processing reforms do you plan to implement?

[The information follows:]

OVERHEAD COST

The goal of the Office of Disaster Assistance Program is to keep overhead costs at or below 10 percent of the total expenditures from the President's disaster relief fund. However, overhead costs will vary considerably from year to year depending upon the size and location of disasters.

The cost of establishing a disaster field office is relatively constant and not necessarily dependent on the size/cost of a disaster. Therefore, smaller disasters generally result in a higher percentage of administrative expenditures when compared to the program dollars.

In addition, overhead costs will be high when a significant number of disasters strike outside of the continental United States. This will be a major factor in the high percentage of administrative costs for fiscal year 1988.

PROCESSING REFORMS

The Office of Disaster Assistance has identified and implemented several processing reforms to reduce disaster program costs.

These cost-saving measures include the use of more permanent full-time employees as opposed to disaster assistance employees in disaster response operations. Ninety-four new permanent full-time positions have been added in the disaster assistance program divisions throughout the country. These individuals will be able to perform functions previously covered by disaster assistance employees in headquarters and regional offices as well as in disaster field offices.

Considerable savings are being realized in reduced administrative overhead in the temporary housing program. Eligible temporary housing applicants may now choose their own housing and receive federal financial assistance in the form of an immediate housing payment. Improved efficiency and the prompt response allow disaster field offices to close sooner and save administrative expenditures.

We are considering a variety of ways to simplify and streamline procedures for administering the public assistance program in order to realize cost-savings. We are exploring ways to allow states to play a larger role in program implementation and reducing federal administrative and paperwork requirements on states and local applicants.

Mr. PETERSON. I would like to bring up the automatic disaster assistance management system that we have been using which has expedited considerably the processing of claims and reduced administrative costs in the field. That is one particular area I think we should be proud of.

Senator PROXMIRE. I appreciate that, but the question was: What sort of overhead cost percentage are you shooting for and what kind of processing of forms do you plan to implement?

Mr. PETERSON. I don't have the figure on the percentage.

Senator PROXMIRE. Do that for the record.

Mr. PETERSON. Yes, sir. Thank you.

INSURANCE INCENTIVES IN DISASTER RELIEF

Senator PROXMIRE. Then you also hope to achieve savings through incentives for greater insurance coverage.

Mr. PETERSON. Yes, sir.

Senator PROXMIRE. What incentives will you use?

General BECTON. It gets back to the program that the Executive Assistant to the Federal Insurance Administrator was talking about. The more people we get to buy insurance, the smaller would be the requirement for our assistance in disaster relief.

Senator PROXMIRE. How do you do it? What incentives do you use? That is the question.

[The information follows:]

INCENTIVES FOR GREATER INSURANCE COVERAGE

FEMA published an advance notice of proposed rulemaking in the Federal Register requesting comments and suggestions from the general public, state and local government representatives, and other federal agencies on ways FEMA can provide incentives for increased insurance coverage. The potential changes made in the Register include:

1. To increase the amount of required insurance which an applicant must maintain up to the full insurable value of the structure rather than the amount of the disaster assistance grant;
2. To modify the current policy requiring flood insurance for disaster damaged structures which are outside of identified flood hazard areas;
3. To modify current policy waiving the requirements for insurance on disaster damaged structures with less than $5,000 damage;
4. To adopt a combined insurance-mitigation strategy.

The time limit for comments and suggestions regarding these possible incentives was extended to late April at the request of the National Association of Counties.

The most effective incentive to increase insurance coverage would be to eliminate the "first bite free" that is now given to all applicants for disaster assistance. Currently, state and local governments are not required by law to have insurance coverage on public buildings. When a disaster strikes, FEMA will pay one-time repair or replacement costs for damaged facilities. State and local governments are responsible for costs associated with future disasters on these buildings. The elimination of this provision would yield an estimated $7.8 million. However, it appears that elimination of the first bite free cannot be accomplished by FEMA without legislative change. It is noted that proposed disaster legislation passed recently by the House (H.R. 2707) and several proposals passed by the Senate include elimination of the first bite free and mandate that state and local governments carry insurance on all public buildings.

General BECTON. Encouragement through publicity about what the program benefits are is one. Do you have any others?

Senator PROXMIRE. You are doing that now, aren't you?

General BECTON. Yes, sir, but we are trying to broaden that.

Mr. PETERSON. I think it goes farther than that, very respectfully, sir. At the local level, as you know, insurance costs have had a considerable impact on county and city municipalities. Many counties and cities have looked at an overhaul of their insurance program. I respect that and went through it myself.

However, the insurance costs for structures has not been affected to that degree, and yet many counties are going uninsured in that area. During a disaster, then, it falls back on the federal government to take care of that structure, and we end up being the insurance company.

I think that we need to look at the possibility of developing a rule for publication to address the responsibility of local municipalities to insure their structures. That is a personal opinion, but I think it needs to be done.

HAZARD MITIGATION EFFORTS

Senator PROXMIRE. Before I yield to Senator D'Amato, and I will in just a minute, I want to ask one more question. You mentioned increased hazard mitigation measures in your opening statement. Could you be more specific and tell us what hazard mitigation measures will be initiated and how much that will save us?

General BECTON. How much would it save? There are examples of training where we are going and working with other federal agencies.

Mr. PETERSON. That would take a detailed analysis. I would like to provide it for the record.

Senator PROXMIRE. All right.

[The information follows:]

INCREASED HAZARD MITIGATION MEASURES

FEMA is developing improved and increased hazard mitigation measures in both our public and individual assistance programs.

In the public assistance program, we will continue to focus on improved training for federal and state damage inspectors. The training emphasizes identification of hazard mitigation techniques and the incorporation of these techniques into the review process. In addition, public assistance projects costing over $25,000 will receive special mitigation reviews. Many measures, such as elevating electrical and utility controls above flood levels, installing backwater valves, using flood resistant building materials, relocating damaged sections of road, et cetera., are low or no-cost measures that can be incorporated as part of the repair or replacement of a disaster-damaged facility. We encourage these projects and estimate that their implementation could reduce the need for future disaster assistance by as much as $1 million per year over the next 5 years.

In the area of individual assistance, we will continue providing practical educational materials to individuals at the disaster application centers. This information for homeowners identifies measures to help reduce future vulnerability to disaster damage. Demand and acceptance of this service has been great. We are currently conducting followup investigations at certain sites to evaluate the actual application and usefulness of these materials. We estimate that cumulative annual savings could reach $0.4 million over the next 5 years.

STATEMENT OF SENATOR D'AMATO

Senator PROXMIRE. Senator D'Amato.

Senator D'AMATO. Thank you, Mr. Chairman. I am going to ask that my prepared remarks be included in the record in their entirety as if read.

Senator PROXMIRE. Without objection, so ordered.

[The statement follows:]

STATEMENT OF SENATOR D'AMATO

Mr. Chairman, I would like to welcome to the subcommittee this morning the distinguished Director of the Federal Emergency Management Agency, Gen. Julius W. Becton, Jr.

I look forward to your testimony.

For fiscal year 1989 you are requesting $698.4 million. This represents a $66 million increase over funds appropriate in fiscal year 1988. The bulk of the increase is due to more funds going to the civil defense category making it an increase of $26.8 million.

As you are aware, the NRC recently adopted a new rule allowing utilities to prepare an emergency evacuation plan if state and local governments have refused to cooperate in emergency planning. This new rule will undoubtedly affect the Shoreham nuclear plant on Long Island. I believe this rule to be irresponsible and dangerous. By adopting this rule, the NRC has violated the public trust by moving ahead toward its ultimate goal of opening Shoreham.

I have prepared some questions for General Becton which will attempt to clarify FEMA's role in this new rule and in evaluating Shoreham's emergency evacuation plan.

Thank you, Mr. Chairman.

PREPARATION OF EVACUATION PLANS BY UTILITIES

Senator D'AMATO. It is good to see General Becton here.

General, as you are aware, the NRC recently adopted a new broad rule allowing utilities to prepare an emergency evacuation plan when state and local governments have refused to cooperate in the emergency planning. What is your official position on this rule? Do you really believe that a utility like Long Island Lighting Co. can devise a safe and workable evacuation plan when state and local governments have refused to cooperate with the plan?

Before I ask you to respond to that question, I want to be fair with you. I am submitting a letter which is dated yesterday, April 25, 1988, to you with some specific questions which I would very much like to include in the record, Mr. Chairman,

Senator PROXMIRE. Without objection, it will be printed in full in the record.

[The letter follows:]

LETTER FROM JULIUS W. BECTON, JR.

MAY 16 1988

The Honorable Alfonse D'Amato
United States Senate
Washington, D. C. 20510

Dear Senator D'Amato:

This is in response to your letter of April 25, concerning the decision of the Federal Emergency Management Agency (FEMA) to review Revision 9 of the Long Island Lighting Company (LILCO) offsite emergency plan for the Shoreham Nuclear Power Plant.

Under the terms of the April 1985 Memorandum of Understanding (MOU) between FEMA and the Nuclear Regulatory Commission (NRC), we agreed to review currently available offsite emergency preparedness plans where a State or local government has not submitted plans for review and approval under our Regulation 44 CFR 350. We interpret this provision of the MOU to include offsite plans prepared by utilities. A copy of the MOU is enclosed for your information. In addition, in the conference report to accompany H.J. 395, which became Public Law 100-202, at page 854, the conferees directed FEMA to develop all necessary supplemental guidance to review and evaluate utility-sponsored emergency plans and exercises for nuclear power plants. A copy of the report language is enclosed for your reference. In the event a State or local government chooses not to participate in the Radiological Emergency Preparedness Program (REP), FEMA has received strong written direction from the Congress as to how the agency should proceed. A recent example is a November 13, 1985, letter co-signed by the chairs of the House and Senate HUD-Independent Agencies Appropriations Subcommittees. The letter transmits specific language in House Report 99-212 and exhorts FEMA to explore all alternatives to a hostage situation brought about by State or local government's refusal to participate in offsite emergency preparedness around a nuclear reactor. A copy of the letter is enclosed.

On January 27, 1988, FEMA received a request from NRC to review and evaluate an offsite emergency preparedness plan for the Shoreham Nuclear Power Station, to use certain assumptions in the review of the plan and to provide findings on the plan. On February 8, 1988, FEMA was requested by NRC to evaluate an exercise of the emergency plan for Shoreham.

In your letter, you request written responses to 5 questions. The answers to questions 2, 4 and 5 are not yet available and will require considerable research on our part. For example, since we are currently in the process of determining the extent of play in the exercise, we do not know the exact number of exercise evaluators and controllers required. Such factors are necessary to answer your questions about costs.

We expect to respond fully to these questions as soon as feasible. In the interim, I want to assure you that FEMA has not changed its view that State and local government participation is preferred in arriving at a finding of reasonable assurance at a nuclear power plant. However, in the absence of State and local government involvement in developing and exercising the plans, we feel obligated to honor our agreement with the NRC and to follow the guidance we received from Congress to review a utility plan. This review will be conducted using NUREG 0654, FEMA-REP-1, Revision 1, Supplement 1, which is based on the following NRC assumptions: that in an actual radiological emergency, State and local officials that have declined to participate in emergency planning will:

1. Exercise their best efforts to protect the health and safety of the public;

2. Cooperate with the utility and follow the utility offsite plan, and

3. Have the resources sufficient to implement those portions of the utility offsite plan where State and local response is necessary.

Any reasonable assurance findings resulting from such a revision will be given in the context of the above three assumptions. In any subsequent licensing litigation, NRC has agreed to defend those assumptions as an appropriate framework for determinations of adequacy in offsite emergency preparedness. I hope this responds to your first question.

In questions 2 and 4, you asked for documents relating to communications between FEMA and NRC or LILCO. Such communications have occurred as a result of the LILCO plan review and the preparation for an exercise of the plan. Due to time constraints and our limited staff, we are only able to enclose a partial set of documents relating to those communications. We would not be able to complete a search of our FEMA Region II files until after the exercise, now scheduled for the week of June 6. We should be able to provide any additional documents by July 1988.

You also inquired about the involvement of the Department of Energy (DOE) in the review of Revision 9 of the LILCO plan. To the best of my knowledge, the only DOE involvement in the LILCO plan review and exercise process has been as a member of the FEMA Region II Regional Assistance Committee (RAC). The RAC is chaired by FEMA and is composed of experts from 8 other Federal agencies who provide technical advice to State and local radiological emergency preparedness activities.

If you have any questions, please contact me at 646-3923 or Grant Peterson, the Associate Director for State and Local Programs and Support, who administers the Radiological Emergency Preparedness Program at 646-3692. Additionally, my Office of Congressional Affairs is available to assist you or your staff at 646-4500.

Sincerely,

Julius W. Becton, Jr.
Director

February 9, 1988

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1)	Docket No. 50-322-OL-3 (Emergency Planning)

AFFIDAVIT OF PATRICK G. HALPIN

Patrick G. Halpin, being duly sworn, does state as follows:

I. Introduction

1. I am the County Executive of Suffolk County, New York. I have held this position since January 1, 1988, having been duly elected to this position in November 1987. As County Executive, I am authorized to direct the County's response to emergencies.

2. I am familiar with "LILCO's Motions for Summary Disposition of Contentions 1-2 and 4-10," dated December 18, 1987. This Affidavit addresses matters alleged by LILCO in the Motions.

3. LILCO alleges in the Motions that in the event of a radiological emergency at Shoreham, the Suffolk County government would respond by working in close coordination with LILCO personnel and that Suffolk County officials, in carrying out such a response, would rely upon and follow LILCO's offsite emergency response plan for Shoreham. LILCO asserts that such a coordinated response effort between LILCO and Suffolk County personnel must be presumed to occur on the basis of the NRC's recently

amended emergency planning rule, set forth at 52 Fed. Reg. 42078-87 (Nov. 3, 1987). Attachments 1 and 2 to this Affidavit are summaries and quotations of LILCO's various assertions about the ways in which LILCO claims Suffolk County and New York State would act in the event of an emergency at Shoreham.

4. LILCO's assertions regarding how Suffolk County would respond to a radiological emergency at Shoreham are false. Suffolk County believes that Shoreham should not be permitted, and indeed will not be permitted, to operate above 5 percent power. If, for present purposes of discussion, however, one assumes that Shoreham were permitted to operate, and if there were then a radiological accident at Shoreham, Suffolk County would not use LILCO's plan or coordinate with LILCO personnel in any response to that emergency. To use or otherwise follow LILCO's plan in any way or to rely upon LILCO personnel would be to violate the County's established emergency planning policies, to breach the trust of our citizens, and to endanger the safety of the public through reliance on a LILCO plan and LILCO emergency workers that are incapable of protecting the public safety.

II. County Policy

5. Suffolk County's policy that it will not use LILCO's plan or rely upon LILCO personnel in a Shoreham emergency does not represent a new County policy. Rather, the policy is long standing, enunciated first in Resolution No. 111-1983, then followed by Peter F. Cohalan, the County Executive during most of the period covering the Shoreham emergency planning controversy, and subsequently followed by my predecessor in office, Michael A. LoGrande. A copy of Resolution No. 111-1983 is Attachment 3 hereto; a copy of Mr. Cohalan's statement is Attachment 4 hereto; and a copy of Mr. LoGrande's affidavit adopting Mr. Cohalan's statement is Attachment 5 hereto.

6. I hereby affirm my agreement with, and I hereby adopt as part of this affidavit, Attachments 3-5 hereto. I will not burden this affidavit by repeating the statements and rationale contained in those Attachments. I stress, however, that they set forth in detail the bases for the County's decision not to adopt or implement an emergency plan for Shoreham, the reasons that the County would never use LILCO's Plan, and why the County would never in any way rely upon or coordinate with LILCO personnel in the event of a radiological emergency at Shoreham.[1]

III. Additional Comments Related to LILCO's Motions

7. I am informed that LILCO asserts repeatedly that the County would give LILCO approval or permission to take various actions in the event of a Shoreham accident.[2] LILCO's assertions are false. As County Executive, I would never grant LILCO any such permission or approval. First, in my view, giving LILCO such permission or approval would constitute an improper transfer of the governmental authority and police powers of this County to LILCO. It would thus be inconsistent with my responsibilities as the County Executive and would put into LILCO's hands the public's safety that I was elected to protect. Second, LILCO cannot be trusted to perform its duties capably, let alone perform emergency functions upon which the welfare and safety of 1.3 million citizens of Suffolk County would depend. We on Long Island have learned not to rely on LILCO to take action capably: LILCO's feeble and woeful response to hurricane Gloria and its gross mismanagement of Shoreham's construction are but two dramatic examples.[3] Finally, we have seen the debacle of LILCO's performance in its February 1986 "exercise." Even though LILCO had originated the scenario for the exercise, even though the "exercise" has been found to be too limited in scope, even though LILCO had received advance notice of the date of the nuclear "accident," and even though LILCO had conducted countless drills

to get ready for the exercise and the specific date it was scheduled for, LILCO's LERO personnel still performed incompetently. The Licensing Board's recent decision in LBP-88-2 underscores what we have known for years: LILCO's LERO personnel are "amateurs" (LBP-88-2, at 6), not competent emergency workers; and LILCO's Plan is fundamentally flawed, including deficiencies in communications, training, mobilization of workers, public information, media relations, and handling emergency broadcast system matters.[4] LBP-88-2 provides further corroboration of my judgment and Suffolk County's determination that the County could not and would not rely upon LILCO's plan or personnel. LILCO's plan is seriously flawed and unable to protect public safety, and LILCO's personnel are incompetent and inadequately trained to take effective emergency response actions. Therefore, in a radiological emergency situation at Shoreham, whatever response Suffolk County made, it would be without following LILCO's emergency plan or coordinating with LILCO or LERO. I emphasize that in such a situation, it would not even be realistic to consider working with LILCO. The citizens of Suffolk County would undoubtedly view LILCO as the culprit that recklessly forced Shoreham into operation over the public's overwhelming opposition. The accident would again prove LILCO's judgment to be worthless, and it would prove the public's to have been right. LILCO would be seen as having betrayed its promise that an accident was virtually certain not to happen. No Suffolk County official could then turn to LILCO for aid and advice on how to respond to the catastrophe which LILCO itself created. There would be public outrage toward LILCO and disbelief of anything LILCO was part of, including recommendations for protective actions, public information, and other emergency response actions.

8. LILCO urges that the County would be irresponsible if it were to act on its own. LILCO claims that the County would have

to use LILCO's sirens and LILCO's radio messages and other resources because LILCO's methods are in LILCO's judgment the best way of protecting the public. LILCO is entitled to its views of what is "best" for itself, but LILCO does not speak for the County and has no basis or competence to claim what is "best" for the County or what our "best efforts" would be. The County speaks for itself through its Legislature and its County Executive. On Shoreham matters, we speak in one voice: Suffolk County would not use LILCO's Plan or resources because we believe LILCO's Plan is inadequate and unworkable. We thus have concluded that our "best efforts" would be exercised as described above -- acting on our own, without regard to LILCO's Plan or personnel.

9. I want to ensure that there is no misunderstanding of Suffolk County's policy: Suffolk County will not under any circumstances rely on LILCO's emergency plan or on LILCO's LERO personnel. I have directed my staff to gather all copies of LILCO's Plan in the County's possession, except for only three copies which will be maintained to assist our litigation efforts. The Suffolk County Police Department ("SCPD") personnel who have served and/or may serve as witnesses will have one copy to share only for purposes of assisting with matters in litigation. Mr. Boyle, the County Attorney, will have one copy for purposes of assisting with matters in litigation. And Mr. Kurtter, my Deputy County Executive who oversees Shoreham matters, will have one copy for purposes of assisting with matters in litigation. All other copies of the Plan have been or are being sent to the County's outside litigation counsel, Kirkpatrick & Lockhart, for their use in litigation. It must be stressed, therefore, that County personnel know essentially nothing about LILCO's Plan, except for those few persons who have provided litigation support. And, these persons' knowledge of LILCO's Plan is thus limited to having identified, analyzed, and/or testified about

inadequacies in the Plan and specific ways in which the Plan is deficient. These persons have not studied LILCO's Plan for any purpose of preparing or learning how to administer or implement the Plan. There has been and will be no planning or training whatsoever for County personnel to take any actions pursuant to LILCO's Plan or any other plan or to work with LILCO personnel.

10. It is my intent that the foregoing paragraphs put to rest conclusively LILCO's baseless statements that Suffolk County would ever rely on LILCO's Plan or personnel in an emergency. Yet, there are a number of additional matters contained in LILCO's Motions that I wish to address below.

11. I am informed that LILCO asserts that in the event of an emergency, I or my representative would go to LILCO's Emergency Operations Center. It also is asserted that LILCO personnel would be permitted to come to the SCPD police headquarters in Yaphank to assist in briefing and dispatching County police. Indeed, LILCO would have the Licensing Board believe that the Suffolk County police would work with LILCO's Traffic Guides to implement the traffic and EPZ perimeter access control measures set forth in LILCO's Plan. LILCO also contends that its personnel would be given permission to remove obstructions such as accidents and stalled or broken down vehicles from the roadways and to provide fuel to motorists. LILCO's statements are false, and I reject them as pure fantasy. I would not go, nor would any County representative go, to LILCO's facility; and no LERO personnel would be permitted into the SCPD headquarters. Moreover, under no circumstances would the Suffolk County police work in partnership with LERO personnel to direct traffic or control access to evacuated areas of the EPZ. It is equally baseless for LILCO to suggest that the police would implement the traffic control portions of the LILCO Plan. They would not do so. Nor would I or any other County official give LILCO permis-

sion to remove roadway obstructions or to provide fuel to motorists during a Shoreham emergency. I repeat that LILCO's actions over the years make LILCO a company whose judgment and competence Suffolk County and the public cannot trust or rely on. I would be derelict in my responsibilities if I were to work with LILCO in a radiological emergency situation when the public's lives and safety were in danger and when the public had to have confidence in their leaders and their leaders' judgment. Indeed, if in an emergency I were to turn to the discredited LILCO for help or advice, I would have no credibility with the public because neither I nor the public have any trust in LILCO. If I turned to LILCO, I would lose my effectiveness as a public official.

12. I am informed that LILCO claims that Suffolk County personnel would use LILCO's Plan and rely upon LERO personnel because New York State law, particularly Article 2-B of the New York Executive Law, and the Suffolk County Charter, call for the use of private resources in an emergency. LILCO's statement is false and seriously misleading. While New York law permits reliance in appropriate circumstances on a volunteer organization to carry out certain tasks, the clear premise of New York law is that a County Executive, before relying upon any volunteer organization, must consider the volunteer organization to be competent and helpful in performing needed emergency services. In the present instance, neither LILCO's judgment nor its competence is worthy of Suffolk County's trust. LILCO has demonstrated itself and its LERO organization to be grossly inadequate in its structure, organization, composition, training, performance, and even purpose. Indeed, LERO has shown itself simply to be a cosmetic organization that LILCO has sought to use for the *pro forma* purpose of securing an NRC license, not an organization actually constituted to be able to provide effective emergency services in a nuclear accident where human lives and safety are on the line.5/

13. I am informed that LILCO asserts that Suffolk County in the past has merely offered "generalized denials" in stating that it would not rely upon LILCO or LILCO's Plan. LILCO's statement is false. Attachments 3-5 hereto do not constitute "generalized denials," but rather constitute detailed explanations of why Suffolk County, in the rational exercise of its police powers, has decided not to adopt or implement an emergency plan for Shoreham and why no County Executive could or would make use of LILCO's Plan or rely in any way on LILCO personnel in an emergency. These are pointed statements of principle and practical explanations detailed with chapter and verse specificity. The fact that LILCO persists in mischaracterizing these categorically clear statements and seeking to pass them off as inconsequential is, to Suffolk County, just another example of the cavalier conduct, the lack of good faith, and the misdeeds LILCO has consistently manifested toward Suffolk County. In short, LILCO's claim is simply a distortion of the truth.

14. I am informed that LILCO asserts that the principal reason that Suffolk County would not use LILCO's Plan is Suffolk County's alleged disagreement with LILCO's choice of a 10-mile plume exposure emergency planning zone. LILCO's statement is false. The principal reason that Suffolk County would not use LILCO's Plan is that the Plan would not protect the public's safety, but would instead imperil public safety. Indeed, following an eight month, $600,000 study and analysis by a team of nationally recognized experts, Suffolk County determined that an adequate emergency response, whether it be in the context of a 2, 10, or 20-mile EPZ, would not be possible to achieve.[6] The County's determination was the basis of its resolution not to adopt or implement an emergency plan for Shoreham that was upheld by the federal courts and the courts of New York as being lawful and rationally based. LILCO's claim, again, is simply a distortion.

15. I am informed that LILCO asserts at various places in its Motions that the NRC's new rule and the so-called "best efforts" principle require the Licensing Board to presume that in the event of a serious radiological emergency, Suffolk County would take actions which are contrary to Suffolk County law (Legislative Resolution 111-1983) and the sworn statements of two past Suffolk County Executives and myself. LILCO's assertions are false. The NRC's new rule permits no such presumption. Indeed, the new rule recognizes that local governments and State governments have the authority and responsibility to exercise their police powers in the manner which they deem serves the health, welfare, and safety of their citizens. Attachments 3-5 hereto, as well as the discussion in the body of this Affidavit, explain thoroughly why Suffolk County has determined that its police power responsibilities require it not to adopt or implement an emergency plan for Shoreham and not to rely on LILCO's Plan or LILCO's personnel. Suffolk County has thus acted conclusively within the sphere of governmental responsibilities that is exclusively the County's. Neither LILCO nor the NRC is in a position to second guess how Suffolk County exercises its police powers, and any such suggestions of LILCO or the NRC would be both misguided and false. It is only this County government--established by law and elected by the people it is constituted to serve--that can speak authoritatively of what the County would itself do in an emergency. The fact is that Suffolk County speaks through its elected officials: the County Legislature and the County Executive. The Legislature through duly enacted Resolutions, and the Executive through repeated statements and representations, including affidavits such as the instant affidavit, have spoken categorically and directly: Suffolk County would never follow or otherwise use LILCO's Plan or rely on, coordinate with, or otherwise work with LILCO's personnel in the event of a radiological emergency at the Shoreham plant. Any

statement of LILCO or anyone else to the contrary is but mere fantasy.

Patrick G. Halpin

Patrick G. Halpin

Sworn to and subscribed before me this 9th day of February 1988.

Linda C. Taylor
(Notary Public)

LINDA C. TAYLOR
NOTARY PUBLIC, State of New York
No. 52-4615136 Suffolk County
Commission Expires July 31, 1989

My Commission expires: Commission Expires July 31, 1989

1/ LILCO suggests that because County police officers have responded to several security threats at Shoreham, the County would work cooperatively with LILCO if there were a radiological emergency at Shoreham. LILCO's suggestion is false and a distortion of logic, because the events and circumstances are totally different. The County has determined that it is possible to respond adequately to a Shoreham security incident and the County does so. The County has also determined that an adequate response to a radiological emergency is not possible. Therefore, the County has resolved not to adopt or implement an emergency plan, and it will not do so. The County is thus forthright in the context of both security and emergency planning. It is disingenuous for LILCO to torture facts and logic in order to create false impressions about the County's intentions.

2/ For example, LILCO states in its "Introduction: Memorandum of Law" (p. 3) that "LERO must get permission from the State or County to activate the warning sirens (for example) or to recommend to the public that they shelter or evacuate." LILCO then states that "LERO workers would be permitted to perform specific functions under the direction of these governmental authorities." Id. at 4.

3/ I am informed that LILCO in several affidavits has asserted that its personnel's capabilities have been established through actions such as responding to gas line breaks and directing traffic in a few minor circumstances, and because some individual LILCO employees have received awards. I do not belittle these efforts -- they are commendable. But we must keep in mind how limited these actions were; they are irrelevant to the scope and types of action that would be required in a radiological emergency. When LILCO has been required to act in response to a major event such as Hurricane Gloria, or to the simulation of the 1986 Exercise whose scenario LILCO created for itself, its performance has been inadequate. And, no matter how many gas line breaks LILCO might postulate, the severity and massive impact of a nuclear accident at Shoreham would create burdens on LILCO's workers that even the best gas-line repairman could probably not even imagine. Indeed, it is ridiculous for LILCO to compare a localized gas line break to the evacuation of hundreds of thousands of people under circumstances of a nuclear plant disaster. The fact that LILCO does this, again shows that LILCO does not take emergency planning seriously.

4/ LILCO asserts in its Memorandum of Law (p. 8) that its LERO personnel are "trained" to respond to a radiological emergency at Shoreham. Suffolk County's witnesses at the Exercise hearing, including expert police officers, conclusively demonstrated LILCO's assertion to be false, and LBP-88-2 underscores this fact.

5/ For example, the County Charter permits the County to use "trained" radiological personnel. LILCO cites this provision at pages 5-6 of its Memorandum of Law. But LILCO omits a critical fact: LILCO's personnel are not trained and competent emergency workers on whom the County could rely. The County's witnesses at the Exercise hearing conclusively demonstrated this, and LBP-88-2 underscores it.

6/ LILCO refers several times to the so-called Voorhees plan, *i.e.*, the draft County plan which was developed in 1982 and rejected by Suffolk County in Resolution 111-1983. LILCO's references to that plan are irrelevant because the plan was rejected and is thus a nullity. The plan was a draft document prepared in 1982 by County consultants; when the draft was presented to the Legislature, and reviewed following extensive hearings, it was rejected on the merits. The draft was not distributed to County officials or departments for use under any circumstance. The County has devoted no resources to the implementation of the rejected plan or to any other plan. To my knowledge, no copies of that draft plan are even available to County response personnel. LILCO's references to Mr. Cohalan's statement that the Voorhees plan was the "best possible" plan are likewise irrelevant. The consultants were told to prepare the best possible plan; but that plan was not adequate and was rejected. LILCO's assertions that the rejected draft plan reflects how Suffolk County would act in a Shoreham emergency are baseless, false, and a distortion. LILCO has no right to arrogate to itself the power to speak for the County and attribute to the County the false statements that LILCO fabricates.

Senator D'AMATO. I ask for a general response to these, not only for my consideration. but for the entire committee. There are five questions.

Let me point out to you, so that you don't think I have mousetrapped you——

General BECTON. Senator, you wouldn't do that.

Senator D'AMATO. Oh, I would. [Laughter.]

Certainly. But not to you personally. [Laughter.]

SHOREHAM EXERCISE

That is why I want to give you the benefit of this information. Specifically, my staff informs me that on May 7 of last year, FEMA testified before the Subcommittee on Nuclear Regulation of the Senate Committee on Environment and Public Works. During that testimony, Dave McLoughlin, the Associate Deputy Director for State and Local Programs and Support, assured Congress that FEMA had warned the NRC that FEMA, and I quote:

> . . . had great concern about the absence of state and local government involvement in the preparation of emergency plans.

Mr. McLoughlin concluded again, quote:

> Without that state and local participation, we supply the State and local participation. Without that, we would not be in a position to make adequate judgments on the reasonable assurances of off-site statements.

That raises in this Senator a concern that how can you be taking this position and saying it is really not worth much? I have some more here that gets into the specifics. I didn't want to mousetrap you again. That is why I said I am going to give you the benefit of this.

Then you reverse, it seems to me, course and direction entirely, and you say you are going to participate in this June 13 emphasis provided by the Shoreham mock emergency drill or plan by logo. You know, I think it is not worth a piece of paper. Why don't you just sign off now and say everything is hunky-dory? That gets you into the project a little bit. But it is a myth. It is a joke.

How do you do that? Then I am going to get into some specifics of why. We haven't started touching on the specifics yet, but we will.

General BECTON. I think that I should remind the committee that FEMA's role in the radiological emergency preparedness activity is one of being a consultant to NRC. We do not issue the license; we do not make the rules. NRC is the one that performs that. The NRC has stated three assumptions with which we are complying.

Sure, we are concerned when states and locals do not participate. But by the same token, we may be able to make a determination of reasonable assurance assuming the utility meets all the criteria and the plan can be implemented when we are evaluating it. That is what we propose to do. I would like to read the rest of your letter, sir, to give additional response.

Grant, did you want to make some other comments?

Mr. PETERSON. The other comment that I would make is that I think it is appropriate at this point in time to emphasize the fact that the Nuclear Regulatory Commission sets the guidelines that we must follow. Three assumptions were given to us by the Nuclear Regulatory Commission relevant to the issue that you have just brought up, sir, and the Nuclear Regulatory Commission has told us that those are the assumptions we are to use and that they, the NRC, are willing to defend these assumptions.

We do not have control over the Nuclear Regulatory Commission.

Senator D'AMATO. What are the three assumptions?

Mr. PETERSON. One, that the state and local governments will participate in time of emergency; two, that they will use the utility plan that is developed by the utility; and three, that they will have adequate resources to respond in an adequate manner to those plans. Those are the three assumptions, sir.

COMMUNICATIONS AMONG FEMA, NRC, AND DOE

Senator D'AMATO. I am going to ask, again, since you have received that letter, that you respond, as I have indicated. Let me go over the five questions.

General BECTON. You did say we have received it or will receive it?

Senator D'AMATO. Have you received that letter yet?

Mr. PETERSON. I don't have that in my hand, sir.

Senator D'AMATO. I am going to give it to you right now.

Mr. PETERSON. Thank you, sir.

Senator D'AMATO. I am going to ask that you respond to a copy. There are five questions, and they basically deal with communications you have had between the NRC and FEMA regarding FEMA's decision to conduct the review in the grade and exercise.

Did the Department of Energy communicate with FEMA regarding FEMA's decision to review the local plan? Have they?

LACK OF LOCAL PARTICIPATION IN EVACUATION PLANNING

General BECTON. They have not.

Senator D'AMATO. Did the local officials communicate with FEMA regarding FEMA's decision to review the local plan. Let me ask you to do this and indicate any oral communications that you may have had. There are five questions specifically. I will ask that that be made a part of the record.

Mr. PETERSON. Thank you, sir; I would be happy to do that, sir.

Senator D'AMATO. I will say that I think this whole affair, as it relates to the NRC instances, has been abominable. I really find it rather difficult for FEMA to keep justifying this mystical evacuation exercise. I say mystical because I live there. I have lived on Long Island since 1945. I dare say that for me to believe that you can perform an evacuation on a weekday, let alone on the weekend, from Long Island, trying to move out 1 million-plus people. Maybe the legislation was poorly crafted.

Maybe the site in the evacuation plans should have been evaluated even before a permit was granted, but it is not ours to go around after this and change the intent and the dispute and the letter of the law. That is exactly what has been done. It is wrong, and I think it is the wrong policy for FEMA to be working in conjunction with accomplishing that which has been stated heretofore that it could not accomplish.

How you can create a plan now without there being local participation when a year ago you said you couldn't do it is beyond me. It is absolutely nonsense. So I have to say for the record and note how I feel about that, that you are loaning yourself to this. Of course, you think that there is a greater good in the administration and that the President has somehow communicated this to you.

I realize if he did communicate it to you, that would be a violation of the law. This flies in the face of everything that the law is about, and it is wrong, and this Senator takes strong, strong exception to it. I don't think you are going to see that plant open in any event. It is tied up in litigation.

But I would really appreciate a response as quickly as possible.

General BECTON. We will provide a response, sir, and I should point out one thing. I have not been communicated with by the President to do that.

Senator D'AMATO. We have talked before, and we have talked about it. If you want me to dig out the old transcripts, General, when we had the young man who resigned because he was not going to certify that this drill was one that met the test and the standards, that was Frank Petrone, and I can pull out those records and you can respond next time. I will ask the chairman to hold another meeting and we will go into that whole thing, if you want, as to what you did say.

Now, the fact of the matter is that this situation has enjoyed tremendous political support from the administration, whether written explicitly. It has always been the sense that we want to bring this about. There is no other reason than your firing of Petrone, but it is my opinion that overstepping the zealousness conducted on your part went well beyond that which you should have done.

That is my feeling. I am going to state it. I have told you before. There is nothing, nothing that you have ever said or demonstrated to change my mind. I think that was a terrible miscarriage of justice.

EQUAL OPPORTUNITY EFFORTS

Senator PROXMIRE. General, I am going to have to leave in a couple of minutes to go to the floor for a statement. I would like to ask you questions in just one more area, and it won't take long. I would like to move now to your equal employment opportunity efforts. Can you tell me what percentage of women there are in the FEMA work force?

General BECTON. Yes; we have those figures. I would point out, sir, while the Chief of Staff pulls them out, that I think we have a record that is better than any other agency.

Senator PROXMIRE. It is something to be proud of. I think that is fine.

General BECTON. For fiscal year 1987, sir, it was 36 percent.

Senator PROXMIRE. Thirty?

Mr. TIDBALL. Thirty-six percent.

Senator PROXMIRE. How many GS-12's and above positions are held by women?

Mr. TIDBALL. Of women, sir, GS-9 through GS-12 was 32 percent.

Senator PROXMIRE. Thirty-two percent?

Mr. TIDBALL. Yes, sir.

Senator PROXMIRE. Percentage of women working for FEMA is not as high as it is in some other agencies who have come before this committee who I have questioned. The percentage, however, in GS-12, and particularly the percentage in relationship to the number of women employed, is one of the best, probably the best. Is that right? Was that 12 or 9 to 12?

Mr. TIDBALL. Nine to twelve.

Senator PROXMIRE. Nine to twelve. Can you give us 12 and above?

Mr. TIDBALL. Yes, sir. Of the women that we have on board, sir, 20 percent of those are 12 and above.

Senator PROXMIRE. How does that compare with the men?

Mr. TIDBALL. Of the men on board, 80 percent are GS-12 and above.

Senator PROXMIRE. How about minorities? How many GS-12 and above positions are filled by minorities?

Mr. TIDBALL. A total of 140, or 12 percent, sir.

Senator PROXMIRE. Twelve percent.

General BECTON. Sir, may I point out also that of the last four——

Senator PROXMIRE. So 12 percent of all the GS-12 and aboves are minorities; right?

Mr. TIDBALL. That is correct, sir.

Senator PROXMIRE. I beg your pardon, General.

General BECTON. I was going to say of the last four SES'ers that we hired, three were women.

Senator PROXMIRE. Give us the GS-12 and above for both categories—minorities and women—if you can, plus the percentage of the total work force; yes.

[The information follows:]

SELECTED EEO STATISTICS

Percentage of grade 12 and above employees who are women or minorities: Women, 227, or 20 percent; minorities, 140, or 12 percent; total women and minorities; 367, or 33 percent; total FEMA work force GS-12 and above, 1,112 (48 percent of total Agency work force).

SUBMITTED QUESTIONS

Senator PROXMIRE. Finally, we have a number of questions which we would like you to respond to for the hearing record.

[The questions and answers follow:]

QUESTIONS SUBMITTED BY SENATOR PROXMIRE

EMERGENCY BROADCAST SYSTEM

Question: You are requesting $3.7 million for the Emergency Broadcast System, exclusive of personnel, an increase of $1.8 million or 94 percent over current year funding. Your justifications indicate that part of the increase will fund the protection of 55 Originating Primary Relay Stations under Emergency Management Planning and Assistance. How are the stations currently protected?

Answer: The 55 Originating Primary Relay Stations, which are commercial broadcast stations, are the first stations in each State to receive information from the State EOC. As a result, they are a pivotal component of the Emergency Broadcast System. Although one-third of these stations were provided with full protection in the 1960's, the level of protection has degraded and may well be totally ineffective.

Full protection of these stations, which is provided through the Broadcast Station Protection Program, is comprised of: emergency generators for backup power; required switching equipment; a 14-day fuel supply; transceivers for communications with the State EOC; programming equipment for use in the shelter; electromagnetic pulse protection equipment; and a shelter ranging from 150 to 300 square feet with a protection factor of 100 PF.

Question: This is a tough budget year. How would your Emergency Broadcast System program be affected if we continued to fund it at the current level?

Answer: If the Emergency Broadcast System (EBS) program is funded at the current level, the capabilities of the EBS will continue to deteriorate. Maintenance and repair funds have not been available in sufficient amounts for a number of years which has resulted in a continuing deterioration of the Emergency Broadcast System. If funding is continued at the current level, maintenance and repair could not be undertaken because of the requirement to develop the Primary Entry Point system, which is a Presidential level requirement. The current state of the Emergency Broadcast System capability is such that it can no longer be relied on as a national security asset.

RADIOLOGICAL EMERGENCY PREPAREDNESS

Question: You are requesting $7.3 million, including personnel costs, for Radiological Emergency Preparedness associated with commercial nuclear power facilities. Page S-3 of your justifications states that the $7.3 million will be partially offset by $4 million in revenues to be collected under proposed legislation from the utilities serviced in the course of the licensing process. What is the status of the legislation?

Answer: Draft legislation to authorize the assessment and collection of fees from utilities to offset 50% of the REP program costs was developed by FEMA and forwarded to the Congress on April 16, 1987. In February 1988, the Office of Management and Budget (OMB) requested revision of the draft legislation to increase the level of fee assessment to 55% of the REP program costs. The draft revision was made and was provided to the OMB on February 22, 1988. This revision is currently with the OMB for review and concurrence.

CIVIL DEFENSE - EMERGENCY MANAGEMENT PLANNING AND ASSISTANCE

Question: You are requesting $25.7 million for non-personnel costs, "Other Services" in Civil Defense Emergency Management Planning and Assistance. That's an increase of 149 percent over current year funding. What would the additional $15.3 million be used for?

Answer: The increase of $15.3 million in "Other Services" represents contract support for Civil Defense Emergency Management Planning and Assistance. The purpose of the increase is to provide the groundwork for developing new or improving existing civil defense infrastructure capabilities at the State and local levels consistent with the requirements of NSDD 259.

The details of the increase are contained in the justification packages. In summary, it includes funds for:

(1) the addition of 225 Individual Mobilization Augmentees at the State and local levels;
(2) computerizing the Comprehensive Cooperative Agreement process in order to simplify the process for State and local personnel;
(3) developing a Radiological Defense surge production base consistent with NSDD 259;
(4) developing and/or distributing printed and video materials on civil defense family preparedness for State and local governments and volunteer organizations and developing guidance for community plans for life support actions essential to sustain survivors;
(5) enhancing the survivability of the Emergency Broadcast System, which disseminates warning and emergency information to the President, national, State and local officials for domestic or national security emergencies, by the repair and maintenance of 55 Originating Primary Relay Stations and protection for 20 Primary Entry Point stations;
(6) surge planning, consistent with the requirements of NSDD 259, to provide in-place capability from which surge activities would be taken in the event of an increase in international tensions;
(7) developing instructional materials for use in surge training for State and local officials;
(8) developing and reproducing standby materials for dissemination to the public for education and awareness of peacetime and attack hazards and means of protection;

(9) capital purchases for the FEMA National Radio System; and
(10) modernization of the National Warning System.

RESOURCES PREPAREDNESS

Question: Page EM-111 of your justifications indicates that $292,000 and 2 workyears will be transferred from Natural Resources Planning to Operations and Maintenance, Department of Defense. This will effectively zero out Natural Resources Planning in FEMA's budget. Does the Department of Defense (DOD) currently provide resources for this function?

Answer: The Operations and Maintenance budget of the Department of Defense for Fiscal Year 1988 includes no resources for the Natural Resources Planning function. However, a Determination Order is under preparation to transfer the residual resources in this FEMA account to the Department of Defense effective July 3, 1988. All resources for the function starting in Fiscal Year 1989 will be provided through the Operations and Maintenance budget of the Department of Defense.

Question: You're requesting $340,000 and 3 workyears for Resources Preparedness Program Integration, an increase of $75,000 over your current budget. This program provides executive-level management and administrative support to coordinate the efforts of the three other elements in Resources Preparedness. If your request to transfer the Natural Resources Planning program to DOD is approved, Resources Preparedness Program Integration will have only two programs to integrate. Why are you asking for a budget increase of almost 30 percent in an area where the workload seems to be declining?

Answer: The increase of $75,000 is needed for contractor support for the intensified interagency role of the Federal Emergency Management Agency in civil sector mobilization resources management. This requirement includes the effect of pending revisions to Executive Orders 11490 and 10480 and the nonmilitary aspects of industrial resource utilization during national security emergencies.

STATE AND LOCAL EMERGENCY MANAGEMENT

Question: You are requesting $58 million for State and Local Emergency Management, an increase of $2.8 million or 4 percent over current year funding. This program provides grants to State and local governments to handle a wide range of emergencies including natural and technological disasters, as well as national security emergencies.

Last year your justifications indicated that in order to achieve 100 percent national population coverage 5,700 jurisdictions would have to participate in Emergency Management Assistance. However, currently there is a downward trend of participating jurisdictions from 2,750 in 1985 to 2,680 in 1987. Why are fewer communities participating?

Answer: The recent review of the civil defense program resulted in the issuance by the President of National Security Decision Directive (NSDD) 259, dated February 4, 1987. NSDD 259 directed FEMA to emphasize the "development of a civil defense infrastructure capable of rapid expansion in a national security emergency." FEMA was also directed to develop "Plans which include provisions both for incremental or gradual mobilization of civil defense capabilities in a period of gradually increasing world tensions, and for a civil defense surge in an international crisis."

As part of this effort, and due to the continuing budgeting problems faced by the U.S. Government, the Agency determined that 100 percent participation in EMA would be infeasible in the foreseeable future. As a result, the Agency determined that its base infrastructure should consist of (1) all current participants (i.e., 56 States and State equivalent jurisdictions) and 2,634 existing local jurisdictions) plus the addition of all cities and counties above 50,000 population not presently participating. This will add 141 additional jurisdictions. Current participation accounts for 81 percent of the population. The additional 141 jurisdictions would add 7 percent for a total base infrastructure coverage of 88 percent.

The remaining 1,079 counties, not presently participating with populations under 50,000, would then be gradually mobilized or selectively surged as required.

We believe, but it cannot be documented, that the downward trend in participation is due to two interrelated but separate factors. First, since FY 1985, funding for the EMA program has been reduced both in real terms and by inflation. The amount of funding available has simply not been enough to persuade some jurisdictions to remain in the program. Secondly, the Agency has instituted minimum capability requirements for all fund recipients. These minimum requirements are for jurisdictions to demonstrate their ability to plan their response to all emergencies; exercise their plans to validate their viability; and to report their state of readiness to the next higher authority. Undoubtedly, these minimal requirements were also used as an excuse for some poor or nonperforming jurisdictions to terminate their participation.

SUPERFUND TRANSFER

Question: In both fiscal 1987 and 1988 you received a $5 million transfer from EPA's Superfund account for hazardous materials training. It is my understanding that FEMA was to request the $5 million directly in fiscal 1989 instead of relying on a transfer from EPA. Why did you decide not to request the $5 million?

Answer: The $5 million for the Section 305(a) training funds was included in FEMA's FY 1989 budget request to OMB for Earthquake and Other Hazards (EOH) to support the Agency's hazardous materials activities.

Because of the prevailing budgetary climate, the emphasis in the President's budget to reduce the national deficit, and the need for resources for other efforts, the Administration has not included funding for this item in its request to Congress.

Question: Will you conduct any hazardous materials training in fiscal 1989?

Answer: Both the National Fire Academy and the Emergency Management Institute offer hazardous materials training as part of their normal curriculum. As an example, the following is a list of the courses being offered in 1988:

National Fire Academy

Resident

Hazardous Materials Tactical Considerations - 12 offerings
Chemistry of Hazardous Materials - 12 offerings

Field

Hazardous Materials Incident Analysis*
Hazardous Materials: The Pesticide Challenge*
Recognizing and Identifying Hazardous Materials*

* These courses were handed off in 1984 but a limited number of direct deliveries are still conducted.

Emergency Management Institute

Resident

IEMC - Hazardous Materials - 2 offerings
Hazardous Materials Contingency Planning (Train-the-trainer) - 5 offerings

Field

Analysis of Hazardous Materials Emergencies

The delivery of these courses is funded through our regular appropriation. We will continue these course offerings. Within the Academy, however, the number of offerings of the resident courses has been reduced since these courses are also being offered offcampus as a result of funding provided under the Superfund/Title III.

The additional funding from the Superfund appropriation provided the States with additional opportunities to deliver these courses, as well as permitted the delivery of resident courses off-campus to supplement the resident activity. Without the Superfund funding, we will not be able to provide these additional course offerings unless the States can fund them. In addition, any new training development is unlikely and resources to support State hazardous materials training activities will be minimal.

DISASTER RELIEF FUND

Question: GAO goes on to say in its report on FEMA's response to West Virginia's November 1985 flood that federal agencies took an average of 6 weeks to complete the application process for initial public assistance applications. Approved amounts for some public applicants were significantly underestimated, thus requiring supplemental applications that slowed recovery efforts. According to GAO, you said the approval timeframe was too long. What are you doing to remedy this situation so it doesn't happen again?

Answer: Since the time of the West Virginia disaster, FEMA has implemented an improved technique for estimating disaster repair costs. Rather than basing the estimates on materials, equipment, and labor costs, they are now based on unit prices. A listing of unit prices for all frequently encountered types of repair work is developed for each state or region; the results should be fairer and more consistent estimates. Another new development, the standardized Damage Survey Report, is intended to expedite the inspection process. During the West Virginia response, all information and recommendations, often repetitive in nature, had to be written up for each Damage Survey Report. Now, codes for generic damages and scopes of work substitute for much of the previously written information.

During the past year, FEMA has begun to implement a systematic evaluation procedure for large disaster responses. A team is charged with visiting the Disaster Field Office to evaluate, among other things, the quality of the Damage Survey Reports and the timeliness of processing the project applications. Any potential deficiencies in either area should be identified and corrected through these evaluations.

EMERGENCY SHELTER GRANTS

Question: You are requesting $80 million for Emergency Food and Shelter for the homeless, a decrease of $34 million under current year funding. The 1988 Appropriations Act increased the cap or Emergency Food and Shelter Grant administrative costs from 2 percent to 3.5 percent. The intent of Congress was to ensure that the money be used directly to provide services to those in need. I understand you told the House appropriations subcommittee that you would like the administrative costs percentages increased due to staff burnout. Could you elaborate on that issue?

Answer: FEMA has no exact number, but the burnout rate among the organizations distributing these funds is considerable since we ask each program, quite simply, to do more than they've ever done before. We help them to expand their services but provide minimal administrative support funds. Perhaps the best way to consider this issue is that this year, close to $120 million in services will be delivered to needy Americans through the Emergency Food and Shelter Program. However, no additional salaried positions are paid for with those funds. Using our funds, and delivering additional services, accounting for our program funds is, in every case, an "additional duty." We are now in our fifth year of such "additional duties" and they do cause staff burnout. We can't quantify it further, but the numbers explain the situation. When individuals stretch their programs, they're, inevitably, stretching themselves.

Question: The Department of Housing and Urban Development has requested that Congress zero out their Emergency Shelter Grant program. As part of their justification, they state that FEMA will be able to take up the slack. HUD's Emergency Shelter Grant program's purpose is to help increase the availability of temporary emergency shelter for the homeless. Are you capable of taking up the slack if HUD's Emergency Shelter Grant program is zeroed out?

Answer: We are prohibited under the McKinney Act from actually replacing the Shelter grant program, which provides for major rehabilitation. Under McKinney, we are limited to rehab work that brings a facility to code or makes it safe and sanitary. But we are not authorized to expand facilities for more services.

NATIONAL FIRE ACADEMY

Question: You are requesting $6.1 million for the National Fire Academy in 1989, a reduction of $822,000 below your 1988 budget for the Academy.

As you may know, the staff has been receiving the monthly minutes from meetings of the Academy's Board of Visitors.

According to the minutes of the Board's November, 1987, meeting, the National Emergency Training Center does not comply with currently adopted rules and regulations of the Maryland State Fire Marshal and the 1984 Basic Building Code. Can you tell us why this is the case and what steps you are taking to address the situation?

Answer: In October 1986, the Maryland State Fire Marshal was requested by the Associate Director for Training and Fire Programs to conduct a fire prevention inspection of the National Emergency Training Center under the provisions of concurrent jurisdiction between FEMA and the State of Maryland. Although many fire protection measures had been taken since the facility was purchased in 1979, an inspection under the provisions of an applicable State and/or Local Fire Protection Code had not been conducted.

The Fire Marshal's Office of the State of Maryland completed a Fire Safety Inspection in March 1987. The inspection revealed that, even though extensive renovations and repairs had been made since 1979, there were still areas which did not meet code requirements. In addition, the inspection report identified areas which should be corrected to make the facility a model facility for fire protection and life safety.

The NFA Board of Visitors (BOV) reviewed the inspection and submitted a resolution to the Director of FEMA that set out to establish the NETC as a model facility for fire protection and life safety. The BOV further resolved that the NETC will be governed by the adopted code of the State of Maryland.

The State Fire Marshal's report identified several major discrepancies which require correction as soon as funds are available. Included in these discrepancies were:

1. Installation of sprinkler systems in the remaining facility buildings B, G, H, I, and J. Sprinklers are also required in the first through third floors of building E and also in building M. Action was initiated in 1988 to procure the service. The estimated cost is $300,000 - $600,000 and the work is expected to be completed in late FY 1989.

2. Upgrade Fire Hydrant and Water distibution system. This action will correct discrepancies in existing hydrants and install new hydrants in accessible and needed locations. A procurement action will be initiated in late FY 1988 with completion expected in late FY 1989. The estimated cost is $200,000 - 300,000.

3. Correct existing spinkler systems. Sprinkler systems in buildings A, C, D, and F were installed improperly and corrections must be made (Check valves were not installed in systems). A procurement action will be initiated in late FY 1988 with completion planned for late FY 1989. The estimated cost is $45,000 - $60,000.

4. Renovate buildings E and K to provide code approved egress and mobility impaired access. This will enable use of the 500 seat auditorium in building E and provide better traffic flow in the dining room in building K. Also install sprinklers in remainder of Building E. Design work is in progress. An A & E contract is being procured. Estimated cost of building E is $500,000 - $750,000 and Building K is $300,000.

5. Upgrade the Facility Fire Alarm and Control System. The primary alarm system is a radio transmission system which sends signals to a control unit in Building E. The system is at its capacity and does not cover all buildings on campus. The code requires that alarms report to a central area. This includes all smoke and heat sensing alarms installed in the dorms and other buildings. A state-of-the-art fire control system will provide us with the protection required by the code. The installation of an Energy Management System with the Fire Control System (FCS) will reduce the cost of energy usage. The cost savings resulting from energy management will make funds available for other projects or the FCS. The project is in the planning stage. The estimated cost is $1,000,000.

The Site Management Branch intends to pursue the resolution by the NFA Board of Visitors and the Director of FEMA to make the NETC a model facility in fire prevention and life safety.

NATIONAL TRAINING CENTER

Question: The National Training Center has long had problems with its procurement practices. One problem cited by GAO is inadequately trained personnel staff with procurement responsibilities. For example, a GS-5 facilities clerk, with no apparent direct knowledge of products or services rendered, was project officer on 12 awards totalling $1.9 million.

The procurement problems at the National Training Center are not new to FEMA. Since at least 1982, FEMA-initiated evaluations have repeatedly found weaknesses and recommended improvements in spending controls at the center. Why didn't you implement recommendations for the FEMA-initiated evaluations to prevent the procurement abuses found by GAO?

Answer: The procurement reviews identified four basic problem areas. They were:

1. Transactions and significant events being authorized and executed by individuals who were not properly trained to act within the scope of their authority.

2. Key duties and responsibilities in authorizing, processing, recording, and reviewing transactions were not separated among individuals.

3. All such transactions and other significant events were not adequately documented or properly recorded and classified.

4. Proper supervision was not established and maintained.

In December 1986, a new, highly qualified Chief of Procurement was hired. This was the first time in eighteen months that there was a Chief in the branch. There was difficulty in filling the position due to an Agency hiring freeze. Prior to that, the branch was unsupervised and only loosely guided by the Chief of Management and Administration who has since retired. Additional staff has also been added.

Since this new management team has been in place, great strides have been made to correct the problems that have plagued the NETC procurement branch. A substantial amount of training of procurement personnel has already occurred and more is planned. Every effort has been made to implement the recommendations of the May 1987 procurement review. Project officers have received training in the contractual aspects of project management, and are now required to repeat this training every two years. No one is permitted to serve as a project officer who has not met the training requirement. Contracting officer authority has been limited until the office of Acquisition Management is confident that the skills and abilities to perform the procurement function are in place and working.

Question: Another example cited by GAO was $90,000 in expenditures, spent between 1983 and 1985 to renovate a seldom used log cabin located in a flood plain. The cabin was to be utilized for various center meetings and class graduations. Can you tell us why $90,000 of the taxpayers' money was spent for renovation of a "seldom used" log cabin?

Answer: The renovation work on the log cabin consisted of replacement of the porch and roof to protect and maintain the building's structural integrity. The cost for this renovative maintenance was $50,767, not $90,000, as stated. Subsequent work on the log cabin has consisted solely of maintenance and housekeeping tasks. Utilization of the log cabin has increased notably in the succeeding years. The dinner meal prepared at the log cabin cook-out style on Thursday evenings has become a highlight of each class' stay at NETC and the log cabin also is frequently used for other social events. No new renovation or major maintenance is planned for the log cabin.

MANAGEMENT AND ADMINISTRATION

Question: You are requesting $3 million for the Management and Administration of your Personnel and Equal Opportunity Office, an increase of $302,000 over current year funding. Your request includes an increase of 10 workyears, from 54 to 64. According to your justifications, $260,000 of the increase and all 10 workyears are attributable to the expansion and institutionalization of the FEMA Career Intern Program. What is the size of the expansion you are planning?

Answer: The FEMA Career Intern Program was developed as a planned recruitment tool to deal with FEMA's continuing problems in hiring high quality emergency management personnel. Following a two year program of developmental assignments and formal training the graduating interns will be used to fill the mission-related vacancies such as Emergency Management and Disaster Assistance Specialists. The Program currently has 27 interns who began in September of 1987 and FEMA plans to recruit a second class of interns of a similar size to begin in June of 1989.

Question: This is a tight budget year. Suppose we decided not to provide these funds. How would your operations be affected?

Answer: We would continue to lack a reliable source for filling Emergency Management Specialist vacancies. If the attrition and retirement rates of recent years continue, this situation will reach critical proportions in the years ahead.

OFFICE OF INSPECTOR GENERAL

Question: You are requesting $2.3 million for the Office of Inspector General (OIG), an increase of $38,000. Last year we discussed the backlog of cases in FEMA's Office of Inspector General. You indicated that there was a backlog of 207 cases as of March 25, 1987. What's your current backlog?

Answer: 178 cases

Question: I understand that the OIG still estimates its total staff needs at 75 but you are budgeting for only 45 workyears in 1989, identical to your current staffing level. Why aren't you requesting an expansion of your OIG staff?

Answer: All my managers would like additional staff. I must consider the total needs of the Agency, both program directorates and supporting staff offices, and I believe that I have allocated our resources appropriately.

NATIONAL FLOOD INSURANCE

Question: Your justifications indicate that you are anticipating about 2.3 million policies in force for fiscal 1989 in your National Flood Insurance Fund. My staff looked back into past FEMA budget justifications to track your rate of success on estimating the number of policies in force, the numbers which we base your appropriation on. Your estimates have always been pretty far off target. For example in fiscal 1982 you estimated that there would be 2.4 million policies in force when there were actually 1.8 million - a difference of about 600,000 policies. In fiscal year 1987 your estimate was about 223,000 greater than the actual number of policies. Why are your estimates so far off base?

Answer: Projecting policies in force for the National Flood Insurance Program has proven to be extremely difficult throughout the 20-year history of the program. During that time, the growth in policies has been the result of two main factors: the mandatory purchase requirement included in the Flood Disaster Protection Act of 1973; and the perception of risk (usually the result of some hurricane or other flooding event).

The number of NFIP policies increased dramatically during the 1970's as the majority of the flood studies identifying the special flood hazard area for those communities with the greatest risk, in terms of the number of structures located in the flood plain, were completed and the community converted to full program status. Since that time, it has been evident that many individuals purchase flood insurance when some flooding event reminds them of their exposure to that threat. In 1982, 1985, and 1987 the NFIP experienced significantly lower than average loss years, as the result of few flooding events. Consequently, the surge in flood insurance policies which normally follows such mandatory purchase requirements by federal disaster assistance programs and lenders, did not occur.

In 1983, the FIA instituted the Write-Your-Own Program, whereby private insurance companies write and service flood insurance policies under their own name on a nonrisk sharing basis. The WYO program provides, as one of its many benefits to the NFIP, access to the marketing mechanism of those insurers. Currently, the 85 companies participating in the WYO program are servicing 70% of the policies in the NFIP. While the transition of flood insurance policies to the WYO companies has taken longer than originally projected, the impact of the WYO program on the NFIP policybase is already evident, as the historical drop in the number of policies following lower than anticipated loss years has not occurred during 1986 through 1988. Additionally, the FIA will institute a number of innovations to the program in 1988 which will assist the companies in their marketing efforts. These products, developed with the assistance of the companies and agents' groups, include the following:

(1) A flat rate policy, which is easy to write and process and provides a specified amount of coverage for a reduced premium.

This policy will be available by 1989 and will be aimed at those individuals who are not required to purchase flood insurance but who would purchase the coverage if it were offered at an attractive rate.

(2) A new condominium policy which will enable the condominium associations and individual unit owners to purchase adequate coverage more simply than is currently possible.

(3) A new commission structure which will enable agents and WYO companies to increase their commission if they increase their business will go into effect in 1989. The schedule will conversely reduce NFIP operating costs if agents and WYO companies do not increase their share of the NFIP policybase.

Another area of focus is on the enforcement of mandatory purchase requirement by lenders who place mortgages in the special flood hazard areas. Available data indicates that a significant number of structures located in the special flood hazard areas of communities are without flood insurance, thereby placing lenders as well as homeowners at risk. Additionally, it seems evident that lack of followup by lenders may be contributing to the historical 18 - 22% nonrenewals the NFIP experiences each year. The FIA is working with the federal instrumentalities, to increase awareness of the NFIP and of the ways which are available to simplify the lenders' task of complying with the 1973 Flood Disaster Protection Act.

With efforts described above, the FIA is confident that the future projected policy in force growth rate of 5% will be achieved.

Question: From fiscal 1974 to 1979 the administrative costs per policy were about $24. What are the current administrative costs per policy?

Answer: For 1987, the administrative, or underwriting, cost per policy, which include agents' commissions, servicing agent costs, printing and mailing of the flood insurance rate maps, and other related expenses was $77 per policy. While this figure seems like a tremendous increase over the $24 through 1979, it actually represents a smaller percentage of the premium (33%) than in 1974 through 1979, or in 1980, when the $24 underwriting cost per policy accounted for 35% of the premium. This results from the fact that the largest portion of the underwriting costs ($61 in 1987) are paid to the agents and companies who write and service the flood insurance policies in return for a percentage of the written premium.

As the NFIP has progressed toward its goal of becoming self supporting for the average loss year, and premiums have increased, the commissions paid to those who sell and service the policies have likewise increased. The cost of the servicing agent contract, which represents the largest remaining cost component, has actually decreased in 1987, and will continue to do so in the future, as the Write-Your-Own companies continue to write and service more flood insurance policies.

QUESTIONS SUBMITTED BY SENATOR MIKULSKI

DECREASE IN FIRE FUNDS

Question: How do you explain the increase in other FEMA program funds with the decrease in fire funds?

Answer: Consistent with the Administration's priorities and the implementation of National Security Decision Directive (NSDD) 259 to improve civil defense capabilities with particular emphasis on state and local crisis management, more and better information for the public, and plans for rapidly expanding civil defense capabilities during a crisis buildup, additional funding has been directed toward civil defense. Additional funding has been requested for the replenishment for the Disaster Relief Fund to maintain a level sufficient for a "normal" year of disaster activity.

Consistent with the Administration's initiative to encourage State and local cost sharing, the reduction in the requested level of fire funds is the result of FEMA's proposal that State and local governments and volunteer organizations begin to assume a greater "partnership" in the "Federalized" emergency management program. FEMA believes that having States share the costs of Federally supported programs is an effective way of developing and sustaining their commitment to these programs. This is significant because State and local governments have the primary responsibility for the protection of lives and property from the consequences of any emergency, as part of their overall responsibilities related to public health, safety, and welfare.

FEMA'S SUPPORT OF FIRE PROGRAMS

Question: In what way has FEMA helped achieve the mission, goals, and objectives of the National Fire Academy and the U.S. Fire Administration?

Answer: The U.S. Fire Administration receives a full range of support services from FEMA headquarters unit. The USFA is provided office space for the Administrator and approximately 3 FTE in the Headquarters building. Procurement actions in excess of $25,000 are processed through Headquarters office of Acquisition Management. This represents 80% of our procurement actions. The USFA received the same support as the other Directorates within FEMA. This support includes legal, personnel, comptroller, public affairs and congressional affairs.

The bulk of USFA's staff is assigned to Emmitsburg, Maryland. Of the twenty people authorized for USFA, 18 are at Emmitsburg, and 2 have duty stations in Washington, D.C. This split is in compliance with the instructions we received from Congress.

At the Emmitsburg Site (NETC), USFA has office space provided in building N. They occupy the entire third floor. In addition, the

Administration has a small (single room) office in the Chapel building.

Day to day personnel support is provided as well as some support on budget matters. Small purchase orders and procurements under $25,000 are usually processed through Emmitsburg. Normal support such as power, heat, and telephone are of course provided at both locations.

USFA has a budget line item for site support in the amount of $200,000 per year. This money is spent to cover support provided at Emmitsburg. No part of these funds are diverted to the Washington, D.C. Headquarters operation.

This administrative support is necessary to allow USFA to allocate its limited personnel resources to accomplish their mission. When USFA was reorganized in FY 1983, all of its administrative support elements were removed. When the Fire Administration was relocated to Emmitsburg, it was clearly understood that NETC was to provide the necessary administrative support that USFA required to accomplish its mission.

Prior to the reorganization of USFA in FY83, the Fire Administration had a data support element consisting of some 25 people. As a result of reorganization, this unit was lost and the requirement for data support was assigned to the National Preparedness Directorate.

This data activity is necessary to support the National Fire Incident Reporting System (NFIRS). Public Law 93-498 states that "the Administrator shall operate, directly or through contracts or grants, an integrated, comprehensive National Fire Data Center for the selection, analysis, publication, and dissemination of information related to the prevention, occurrence, control and result of fires of all types."

The bulk of the program is provided by the National Fire Information Council working under a cooperative agreement with USFA. The Office of Fire Data and Analysis, USFA, is staffed with an Assistant Administrator and two people. The Office of Information Resource Management, National Preparedness Directorate provides .8 of one full-time position to support NFIRS.

The National Fire Academy brought a very active and productive program into FEMA when FEMA was established in 1979 by Presidential Executive Order. This program has continued with the support provided by numerous management and administrative functions within FEMA. With funding provided by other FEMA programs, the cost to the NFA for the maintenance and operation of the National Emergency Training Center (formerly occupied only by the NFA) has been reduced.

By the same token, the NFA and the USFA contribute significantly to the achievement of the mission, goals, and objectives of the Federal Emergency Management Agency, as intended by the

Presidential Order that created FEMA, in order that emergency situations requiring a response within our Nation may be better coordinated. The Director and the FEMA Senior Management Team have been taking positive steps to meet with the National Fire Service organizations to enhance the understanding between FEMA and the fire service relative to the role of each in emergency preparedness, response, and mitigation. Two recent meetings were with the Metropolitan Fire Chiefs in El Paso, Texas, and the National Volunteer Fire Council in Vienna, West Virginia.

COMPATIBILITY OF FIRE AND FEMA MISSIONS

Question: It appears that the fire programs within FEMA are a very small portion of the overall agency budget, yet they seem to attract more attention than the others. Is it possible that the basic missions of the fire programs are incompatible with other FEMA programs?

Answer: In order to answer this question we must recall how USFA came into FEMA. The U.S. Fire Administration as envisioned by the framers of Public Law 93-498 was to be the first Federal agency created as the focal point for federal fire protection activities. It was placed in the Department of Commerce, headed by a presidentiallyappointed administrator who reported directly to the Secretary of Commerce. Specifically set out as part of the Fire Administration were:

National Fire Data Center
National Fire Academy
Public Fire Education
Technology Research

In August 1977, President Carter and a reorganization team began work on restructuring various Federal agencies. Fire was one of the organizations slated for reorganization. In February 1978, a proposal was presented to remove the fire programs from Commerce and transfer them to a new Federal agency about to be created, the Federal Emergency Management Agency.

The fire community greeted the announcement with less than enthusiasm, but after negotiations with the White House task force, the Joint Council for Fire Service Organizations agreed to support the reorganization. However, most of the terms stated by the negotiators never took place. They were concerned with the loss of Federal focus on the fire problem. Congress agreed with the proposed change and the move was accomplished.

Since being with FEMA, USFA has experienced several periods of instability. The Administration recommended zero funding for the entire USFA in FY 1983 and FY 1987, and elimination of the Office of Fire Prevention and Arson control in FY 1988 and FY 1989. These problems tend to reinforce in the minds of the fire community a lack of mission compatibility, and lack of support for fire programs.

FEMA as an agency is composed of several directorates, each having a mission that is somewhat independent of the others. This does not necessarily mean lack of unity but rather points up the diversity of FEMA's overall responsibilities. The basic mission of the fire programs, which is to reduce the loss of life and property from the ravages of fire, is not incompatable with FEMA's overall mission. In fact the Public Law that created the USFA clearly states in its findings (P.L.93-498, Section 2(6)) that the fire service and the civil defense program in each locality would both benefit from closer cooperation. Also, section 8(a) states that the Administration shall conduct a continuing program of development, testing and evaluation of equipment for use by the Nation's fire, rescue and civil defense services, with the aim of making available improved suppression, protection, auxiliary, and warning devices, incorporating the latest technology.

In many communities the fire service provides the leadership in integrated emergency management planning and response. In reality FEMA's emergency response system at the State and local levels depends heavily on the fire service. The USFA/State and Local Programs Integrated Emergency Management System project over the past 5 years has fostered the coordination and cooperation of the leadership of the various disciplines involved in emergency management.

The fire programs are an essential element in the integrated coordination that is required to respond to most emergency situations at the State and local level. There are virtually no emergency situations where fire personnel do not have a major response or mitigation role. Fire, law enforcement, civil defense, and public agencies charged with emergency response must all work together in order for integrated coordination to succeed in times of emergency. The basic missions of fire programs are not only compatible with other FEMA programs, but are essential to the success of many of them. Fire is always a partner in local emergency planning and response efforts. Fire should be a partner in the FEMA efforts, also. It is our opinion that it would be compatible to have the fire program within FEMA even though the funding provided is small in comparison to other funding sources.

ORGANIZATIONAL LOCATION OF NATIONAL FIRE ACADEMY

Question: What did the NFA accomplish as an element of the training and fire directorate that it could not have accomplished as an element of USFA?

Answer: The NFA has a well established program, and its program has gained national reputation since it began its on-campus operations in 1980. The advantage of being included under a consolidated training organization is that there is better coordination between the various training institutions. This produces consistency in the material being developed and delivered. While there must be coordination between the program offices and the training organization, there must also be coordination between the various training entities. Consolidation of training efforts is enhanced by the use of a common administrative and educational program support structure rather than independent and separate support. In direct response to the question, however, there is nothing that the NFA accomplished in the Directorate that could not have been accomplished as an element of the USFA if you look at NFA alone rather than the entire FEMA training program.

Question: In what way will the Office of Training improve NFA's ability to achieve its mission?

Answer: We think it is important to point out that the NFA does not stand alone, within FEMA, as an independent appendage. The question is not really so much "how can NFA achieve its mission?", but rather "how can FEMA achieve its mission, incorporating into its operations all the functions provided by the Presidential Executive Order that created FEMA?". The very purpose for the establishment of the Office of Training is to provide for a greater integration of all training programs within FEMA to improve the Federal, State and local governments, and fire service response to all emergency situations. If FEMA achieves its full mission, the mission of the National Fire Academy will also be fulfilled.

Question: Are any NFA funds being used to staff the Washington office?

Answer: Yes, fire funds from NETC Site Administration are being used to staff a portion of the Washington office.

SUPPORT FUNCTIONS FOR PROGRAMS OTHER THAN FIRE

Question: Why do programs other than fire have their support functions funded in a separate budget category?

Answer: The funding for the support portion was included as a program element of the National Fire Academy budget program many years ago. When the Emergency Management Institute relocated to Emmitsburg, a similar program element was included in the Training and Education program under Civil Defense. NETC Site Administration program elements were added under the Emergency Management Institute and U.S. Fire Administration programs by the Congress in 1987. Support for other programs is actually funded under several budget categories. Many of FEMA's support costs are funded under the Management and Administrative Activity. However, most regional support costs come out of the Emergency Management Direction element of Civil Defense. Funding for the Special Facility support costs is budgeted under the classified portion of the Federal Preparedness budget. It should also be noted that the Emmitsburg facility is different from other FEMA programs in that the primary purpose of its support functions is not to provide a work environment for Federal employees, but rather to provide a training facility for State and local students.

NETC SITE ADMINISTRATION

Question: Can you tell the Committee how site administration costs are distributed insofar as program funds are concerned?

- Total site costs FY85 through those projected in FY89.
- How those costs are distributed among EMI, NFA, USFA, and others (actual dollars and percentage).
- On what basis were these distributions made.

Answer: On the following page are the total site costs for 1985 through 1989 arranged by budget program. Also shown is the percentage distribution of program (EMPA) and S & E resources. The dollar amounts have been rounded to the nearest thousand.

	1985	1986	1987	1988	1989
	(actual)	(actual)	(actual)	(projected)	
Training and Education (CD)					
EMPA	$2,689	$2,084	$1,531	$1,750	$1,750
	51.5%	43.7%	32.4%	35.7%	35.7%
S & E	$766	$412	$384	$395	$408
	25.5%	21.9%	20.7%	19.6%	17.9%
Emergency Management Institute (non Civil Defense)					
EMPA	$-0-	$-0-	$458	$200	$200
	n/a	n/a	9.7%	4.1%	4.1%
S & E	$-0-	$-0-	$-0-	$-0-	$-0-
	n/a	n/a	n/a	n/a	n/a
National Fire Academy					
EMPA	$2,530	$2,682	$2,542	$2,750	$2,750
	48.5%	56.3%	53.9%	56.1%	56.1%
S & E	$2,237	$1,470	$1,474	$1,622	$1,873
	74.5%	78.1%	79.3%	80.4%	82.1%
U.S Fire Administration					
EMPA	$-0-	$-0-	$189	$200	$200
	n/a	n/a	4.0%	4.1%	4.1%
S & E	$-0-	$-0-	$-0-	$-0-	$-0-
	n/a	n/a	n/a	n/a	n/a
TOTAL EMPA	$5,219	$4,766	$4,720	$4,900	$4,900
TOTAL S & E	$3,003	$1,882	$1,858	$2,017	$2,281
TOTAL COST	$8,222	$6,648	$6,578	$6,917	$7,181

The distribution of resources is made based upon the manner in which funds are appropriated. The amount of money provided from the fire program has not changed since the time when the National Fire Academy was the sole occupant of the Emmitsburg facility. When the Emergency Management Institute (EMI) was relocated to Emmitsburg from Battle Creek, Michigan, Congress appropriated funds and staff from the Civil Defense program budget only for the additional costs associated with the EMI co-location.

SITE ADMINISTRATION VERSUS PROGRAM COSTS

Question: Can you compare for this Committee the expenditures for the National Emergency Training Center site administration (Fiscal Years 82 through proposed 89) with the expenditures for the National Fire Academy and the United States Fire Administration (Fiscal Years 82 through 89 (proposed)?

Answer: Comparison of Site Administration and Fire Expenditures

(dollars in thousands)

	Non-Fire Site Admin	Fire Funded Site Admin	NFA	USFA
1982 Actual	$2,885	$3,405	$5,531	$8,660*
1983 Actual	$3,110	$3,471	$5,679	$4,160
1984 Actual	$3,309	$4,596	$5,230	$5,198
1985 Actual	$3,455	$4,767	$4,674	$9,512
1986 Actual	$2,496	$4,152	$4,928	$6,442
1987 Actual	$2,373	$4,205	$5,692	$5,605
1988 Projected	$2,345	$4,572	$6,194	$5,602
1989 Projected	$2,358	$4,823	$5,405	$2,457

*Included $3,189,000 used to support a telephone tariff increase imposed on FEMA.

NOTE: The non-fire columns include Civil Defense and EMI non-Civil Defense while the fire columns includes NFA and USFA. The NFA and USFA columns do not include site administration resources.

Question: Please compare the total fire funding FY 82 through 89 (proposed) to NETC site administration for those same years.

Answer: Comparison of Site Administration and Fire Funding

(dollars in thousands)

	Site Administration	Fire
1982 Actual	$6,290	$14,191*
1983 Actual	$6,581	$9,839
1984 Actual	$7,905	$10,428
1985 Actual	$8,222	$14,186

1986 Actual	$6,648	$11,370
1987 Actual	$6,578	$11,297
1988 projected	$6,917	$11,796
1989 projected	$7,181	$7,862

*Includes $3,189,000 used to support a telephone tariff increase imposed on FEMA

NOTE: The fire column does not include any site administration funds from fire sources.

NON-STUDENT USE OF NETC

Question: Can you provide for the Subcommittee a listing of all groups, other than regular students of NFA or civil defense students of EMI, who have utilized the facilities of NETC, Fiscal Years 1985 through 1988 (to date)?

Answer: Attached is a list of outside groups who have utilized the facilities of NETC during Fiscal Years 1985 through 1988 (to date).

SPECIAL GROUPS

NATIONAL EMERGENCY TRAINING CENTER (NETC)

Name of Group	Date	Actual #
FEMA - Information Resources Management	10/4-5/84	34
FEMA - State/Local Programs	10/14-16/84	6
US Dept of Agriculture	10/15-19/84	39
FEMA - Information Resources Management	10/30-11/2/84	55
FEMA - Inspector General	11/5-9/84	49
FEMA - Valentine III Conference	11/12-15/84	215
National Park Service	11/13-16/84	27
Office of Personnel Management	11/18-20/84	184
USFA - Arson Strike Force	12/6-9/84	6
Penn Laurel Girl Scouts	1/11-13/85	286
Fairfax Co Fire and Rescue	1/14-16/85	12
FEMA - National Preparedness	1/15-17/85	9
USFA - Operation Life Safety	1/21-25/85	40
FEMA - Disaster Assistance	1/28-30/85	14
US Dept of State - Costa Rico	2/4-8/85	18
FEMA - Federal Insurance Administration	2/13-15/85	33
Maryland National Guard	2/21-23/85	31
USFA - International Association of Fire Chiefs	2/24-27/85	13
Boy Scouts of America	3/20-22/85	31
US Naval Academy	3/22-23/85	89
US Dept of Navy	2/27-3/1/85	11
FEMA - Exercise	3/6-13/85	200
FEMA - Research Office	3/28-29/85	7
National Park Service	4/7-12/85	30

General Accounting Office	4/11-12/85	16
FEMA - Hazardous Materials Workshop	4/15-18/85	84
US Dept of State - Egypt	4/14-19/85	27
USFA - International Society of Fire Service Instructors	4/15-17/85	15
FEMA - Information Resources Management	4/23-24/85	21
FEMA - Superfund Training	4/23-25/85	35
USFA - International Association of Fire Chiefs	4/28-5/1/85	19
FEMA - Fire Executive Fellowship Program	5/6-8/85	14
CIA	5/6-10/85	22
US Dept of State - Jamaica	6/23-28/85	13
US Dept of Housing & Urban Development	7/22-23/85	12
FEMA - Resources Management	7/22-8/2/85	14
FEMA - Office of Comptroller	7/24-25/85	7
CIA	7/29-8/2/85	37
FEMA - ARGON Group	7/31-8/2/85	10
FEMA - East Caribbean delegation	8/11-16/85	18
USFA - International Association of Fire Chiefs	8/25-28/85	21
NATO - Civil Defense Conference	9/8-11/85	66
US Dept of Agriculture	9/9-12/85	74
FEMA - National Fire Protection Association	9/20-22/85	7
FY86		
USFA - International Association of Fire Chiefs	10/1-3/85	5
US Merit System Protection Board	10/6-10/85	36
FEMA - National Fire Protection Association	10/17-20/85	20
FEMA - Emergency Operations	10/21-22/85	12
US Dept of State	10/25-27/85	14
FEMA - Regional Emergency Communications Conference	10/29-31/85	63

FEMA - Senior Managers Conference	11/8-11/85	25
FEMA - State/Local Programs	1/8-10/86	21
US Dept of State	1/13-15/86	15
FEMA - Congressional Relations	1/15-17/86	6
FEMA - Offfice of Security	1/23-24/86	6
USFA - National Fire Prevention Program	1/24-25/86	39
FEMA - State/Local Programs	1/27-29/86	17
FEMA - Personnel	1/27-30/86	15
FEMA - Federal Insurance Asministration	2/13-14/86	35
FEMA - State/Local Programs	3/10-14/86	26
US Naval Academy	3/14-15/86	45
USFA - Fire Executive Fellowship Program	4/1-2/86	10
National Park Service	4/11-18/86	21
FEMA - International Association of Chiefs of Police	4/20-22/86	16
NATO - Communication Conference	4/28-5/1/86	50
USFA - Federal Work Group	4/29-5/2/86	5
FEMA - Project Officer Training	4/29-30/86	37
St. Joseph's Provincial House	4/30-5/2/86	19
USFA - International Association of Fire Chiefs	5/4-7/86	13
FEMA - Open Learning Fire Service Program	5/6-9/86	19
US Dept of Commerce - National Defense Executive Reserve	5/13-14/86	32
FEMA - State/Local Programs	6/10-11/86	15
Office of Foreign Disaster Assistance	6/12-13/86	23
USFA - Technical Committee	6/25-27/86	8
FEMA - North American Industrial Preparedness Workshop	7/15-17/86	32
FEMA - Training and Education Meeting	8/4-6/86	6

FEMA - Office of Comptroller	8/4-7/86	51
FEMA - NY Congressional Visitors	8/10-11/86	47
MD Emergency Management	8/11-14/86	38
FEMA - Executive Orientation	8/13-14/86	5
FEMA - Disaster Assistance	8/26-29/86	15
FEMA - State/Local Programs	8/26-28/86	44
FEMA - Regional Conference	9/7-12/86	37
FEMA - Firefighter Safety	9/8-9/86	17
VA Dept of Conservation	9/8-11/86	88
FEMA - Information Resources Management	9/15-16/86	36
FEMA - Office of General Counsel	9/22-23/86	15
FEMA - Superfund Conference	9/22-24/86	18
National Park Service	9/22-26/86	38
FEMA - Regional Training and Education Meeting	9/22-26/86	15
FEMA - Regional Operations	9/29-10/1/86	24
FY87		
FEMA - Interagency Resources Preparedness Initiatives Workshop	10/1-3/86	44
FEMA - HUD/USFA'Retrofit Program	10/15-17/86	21
Environmental Protection Agency	10/20-24/86	50
US Dept of Agriculture	10/22-23/86	10
USFA - International Association of Fire Chiefs	10/26-29/86	8
FEMA - Federal Insurance Administration	11/11-14/86	58
USFA - Protective Equipment Meeting	11/16-19/86	6
FEMA - State/Local Programs	11/14-20/86	20
St. Joseph's Provincial House	1/2-4/87	20
US Dept of State	1/5-8/87	25
FEMA - State/Local Programs	1/9-11/87	15

FEMA - Intergovernmental Issues Conference	1/7-9/87	130
FEMA - National Preparedness	1/12-13/87	10
FEMA - State/Local Programs	1/26-30/87	140
FEMA - Offfice of Public Affairs	2/2-6/87	40
USFA - National Fire Information Council Conference	2/7-15/87	44
FEMA - Programs & Academics	2/20-27/87	12
FEMA Exercise	3/4-17/87	200
FEMA - Federal Insurance Administration	3/5-6/87	37
FEMA - International Association of Chiefs of Police Meeting	3/18-20/87	8
FEMA - US Fire Administration	3/19-20/87	5
American Red Cross - New York	3/19-20/87	19
FEMA - Office of Personnel	3/23-27/87	23
FEMA - National Preparedness	3/29-4/1/87	40
Dept of Health and Human Services/Food & Drug	3/29-4/3/87	40
FEMA - Public Affairs	3/30-4/3/87	30
National Guard Bureau	4/6-10/87	58
Dept of Health and Human Services/Food and Drug	4/12-17/87	38
National Guard Bureau	4/13-17/87	60
FEMA - Regional Operations	4/14-16/87	37
USFA - Federal Work Group	4/27-29/87	5
FEMA - US Canada Consultative Group	4/27-5/1/87	30
FEMA - Harvard Executive Review Board	4/28-29/87	12
Internal Revenue Service	5/3-6/87	28
Internal Revenue Service	5/10-13/87	27
FEMA - State/Local Programs	5/10-15/87	14
FEMA - Office of Comptroller	5/13-15/87	20

FEMA - Project Officer Training	5/14-15/87	30
FEMA - Open Learning Fire Service Program Consortion	5/18-20/87	10
FEMA - Inspector General's Office	5/27-28/87	43
Internal Revenue Service	5/27-29/87	40
FEMA - Information Resources Management	6/1-2/87	26
FEMA - EMI Board of Visitors	6/1-3/87	12
FEMA - Programs and Academics	6/2-5/87	17
US Army 7th Signal Command	6/5-7/87	50
National Security Agency	6/24-26/87	16
FEMA - USFA Arson Forum	7/12-15/87	9
FEMA - NFA Board of Visitors	7/13-15/87	8
FEMA - Office of Personnel	7/13-17/87	27
FEMA - National Preparedness Test Force	7/30-31/87	24
FEMA - National Preparednessd Management Seminar	8/3-5/87	6
Maryland Emergency Management	8/3-7/87	41
CIA	8/13-14/87	8
Office of Foreign Disaster Assistance	8/16-20/87	20
FEMA - Office of General Counsel	8/17-18/87	16
FEMA - Civil Defense	8/17-18/87	9
FEMA - Title III State Work Plan	8/20-26/87	5
US Dept of Energy	8/28-29/87	20
US Dept of Energy	9/1-2/87	20
FEMA - State/Local Programs	8/31-9/4/87	18
FEMA - Project Officer Training	9/9-10/87	30
American Society of Crime Lab Directors	9/8-12/87	183
FEMA - USFA Federal Work Group	9/10-11/87	10
PA Dept of Environmental Resources	9/14-17/87	80

US Dept of Health & Human Services/Food & Drug	9/21-25/87	38
FEMA - Office of Personnel-Intern Program	9/27-10/2/87	36
FY 88		
FEMA - National Preparedness	10/5-6/87	22
FEMA - Regional Operations	10/6-8/87	8
US Dept of Labor	10/5-9/87	5
US Dept of Commerce	10/14-15/87	44
National Weather Service	10/19-23/87	33
US Dept of Agriculture	10/26-30/87	26
FEMA - Acquisition Management	10/29-31/87	10
National Park Service	11/2-6/87	22
FEMA - Personnel	11/5-6/87	15
FEMA - NFA Board of Visitors	11/15-17/87	8
Fairfax Co Fire and Rescue	11/17-20/87	11
FEMA - Inspector General's Office	11/17-20/87	2
FEMA - IMA	12/1-2/87	2
FEMA - NFA (Gallaudet Univ)	12/2-3/87	9
ST.Joseph's Provincial House	12/3-5/87	28
FEMA - USFA Symposium	12/3-4/87	5
FEMA - EMI Board of Visitors	12/7-9/87	10
FEMA - National Preparedness	12/14-18/87	29
FEMA - National Preparedness	12/17-18/87	26
FEMA - Management Retreat	1/4-5/88	8
FEMA - Director's Conference	1/20-22/88	88
FEMA - NFA Board of Visitors	1/24-27/88	9
FEMA - National Preparedness	1/25-26/88	26
FEMA - National Preparedness	1/28-29/88	24

FEMA - Multi-agency	2/9-10/88	37
FEMA - Federal Insurance Administration	2/15-19/88	44
FEMA - NATO	2/15-19/88	10
FEMA - Project Officer Training	2/17-18/88	15
Boy Scouts of America	2/20-21/88	20
FEMA - State/Local Programs	2/22-26/88	22
US Dept of State	2/29-3/1/88	20
FEMA - Comprehensive Cooperative Agreement Conference	2/29-3/4/88	75
FEMA - USFA/USDA	3/8-10/88	10
FEMA - USFA	3/14-17/88	24
FEMA - NFA Incident Command System Curriculum Meeting	3/17-20/88	34

REIMBURSEMENT FOR NON-STUDENT USE

Question: Please provide for the Committee a detailed account of how costs associated with non-student use are reimbursed to Fire Academy and civil defense funds.

Answer: The National Fire Academy and the Emergency Management Institute do not have reimbursable accounts and authority. Therefore, any funds collected as a result of outside group use of the facilities are remitted to the general receipts of the U.S. Treasury. There have been limited occasions where outside groups have paid directly for certain identifiable costs related to the use of the facilities.

Question: Please estimate the increase in the number of students that could be accommodated in the NFA resident or weekend programs if the above described extra-curricular activities were to cease.

Answer: Outside groups are permitted to use the NETC facilities on a space-available basis. Course offerings are not cancelled to accommodate outside groups. There are other limitations on the number of students which can be accommodated aside from dormitory and classroom space. They include the funds for adjunct faculty and student travel stipends and permanent staff. The course schedule for EMI and NFA is developed before any requests for outside group use of the facilities are approved.

STUDENT STIPENDS

Question: Would you please clarify the matter of stipends for the Committee:

In our briefing with FEMA staff, they stated that:

- Stipends had been reduced by 1/3 for FY89, yet the figure shown in the FEMA briefing material distributed at that meeting indicates a reduction over $800,000. Isn't that closer to a 2/3 reduction?

- It was indicated that a 1/3 (state and local cost) -- 2/3 (Federal cost) would be applied to all students. Is that true?
- Does that mean you would expect someone from Alaska to pay for their air travel at the same 1/3--2/3 cost sharing ratio as someone traveling from Virginia?

- Can you indicate your present understanding as to the reduced stipend?

- Are you aware of the legislative provision indicating that the USFA Administrator can grant stipends up to 75% of the cost of attending NFA? Are you aware of any such legislative provision for civil defense students at EMI?

- That same budget briefing material indicated that there had been no change in the stipend figure for civil defense students at EMI, is that the case? If so, why?

Answer: The Administration's proposal is to phase in the stipend reduction over a three year period. The first year of the phase-in entails a reduction of $822,000, or approximately 65%, for student travel stipends. The second year will include a further reduction in the travel stipends. In the third year, the student or their sponsor will be expected to bear the full cost of transportation as well as a fee for lodging provided at NETC.

If the amount available for student travel stipends is reduced, one proposal to implement this reduction in an equitable manner and not penalize any one due to their geographic proximity to Emmitsburg is to establish a flat reimbursement amount for each state based on the average fare from that State. Therefore, all students would be treated equally and subjected to a proportionate reduction.

Our present understanding as to the reduced stipend is that the stipend reduction will be phased in over a three-year period. The first year will result in a reduction of about two-thirds of the funds available for student travel stipends unless these funds are restored. OMB has not advised us of the exact reduction for 1990.

Yes, we are aware of the provision of the Federal Fire Prevention and Control Act of 1978 relative to stipends. Section 201 (e) of the Federal Civil Defense Act of 1950, as amended, is the authority for the payment of civil defense students at EMI.

The change to which you refer relates to the maximum amount which can be paid by stipend to EMI students. Because individuals attend EMI under authorities other than the Civil Defense Act and there is no similar limitation in these authorities, the FEMA Office of General Counsel has issued an opinion that it is permissible to pay up to 75% of the expense of attendance. This places the payment of stipends for all students at NETC on the same level.

PROGRAM DEVELOPMENT AND EVALUATION DIVISION

Question: As the Subcommittee understands your organization for the Office of Training, the Program Development and Evaluation division will be evaluating both NFA and EMI programs; and they will also be giving broad program direction to both those institutions. Is that correct?

Please brief the Subcommittee on the fire protection and/or fire training background of the Office of Training's personnel assigned to the Program Development and Evaluation division and to the Director of the Office of Training.

Answer: The Program Development and Evaluation Division (PDE) supports the Director, Office of Training, by providing programmatic linkage with the program offices sponsoring training, by developing a single, integrated training program plan and budget, and by monitoring, reviewing, and evaluating the implementation of the training. Additional detail on the PDE responsibilities can be found in the section of the Office of Training missions and function statement, which follows. The PDE staff will assist the Director, Office of Training, in the formulation of broad training policy and program guidance.

All staff presently assigned to the PDE either were assigned previously to the Headquarters Liaison Staff of the predecessor Training and Fire Programs Directorate, or were reassigned at their request from the Program and Academics staff at NETC. In addition to the one NFA employee who remains duty stationed in Washington, one of the five PDE staff members has worked for eight and one-half years in fire instructional materials evaluation within FEMA and a second had nearly three years experience in fire service and emergency management with the National Association of Counties. The remaining PDE staff include an analyst concentrating on civil defense, an analyst concentrating in natural and technological hazards, and a secretary. New staff hired into PDE will be selected based on their analytical, training, program management, or subject field expertise as it relates to the PDE mission. The Director, Office of Training, was selected for that position based on his experience in senior management in the FEMA Emergency Operations Directorate, in the Central Intelligence Agency, and in the Department of Energy.

Program Development and Evaluation Division - The following broad responsibilities of the Program Development and Evaluation Division will apply to all organizational elements of the Office of Training except when in conflict with P.L. 93-498.

(1) Serves as an interface with FEMA program offices and provides advice and guidance on training and educational matters, identifies training needs and funding sources, assesses academic resources availability, including training and education contractual sources, evaluates the cost effectiveness of the training or education provided by applying a wide range of analytical and evaluative techniques and strategies.

(2) Develops policies and procedures for the development, coordination and/or integration of Agency program goals into training requirements.

(3) Analyzes the need for program and planning policies, procedures, guidance, and documents and recommends appropriate action to meet these needs.

(4) Coordinates with the Superintendents of NFA and EMI, an ongoing review of training policy and curriculum design management to assist the Superintendents in insuring that all training programs of the Agency are in consonance with Agency goals and objectives, program requirements, training needs and the requirements of specific authorizing legislation. This will avoid overlap of course content, where feasible, and ensure the maintenance of a high academic standard.

(5) Reviews and analyzes FEMA programs and policies, especially as legislative and/or regulatory changes occur, and coordinates subsequent developmental programs regarding curriculum design and deployment strategies.

(6) Initiates, develops, administers, and/or coordinates the analysis of long-range FEMA training requirements and subsequent curricula planning and development to meet the needs of the Agency's program areas and conducts long-term evaluation studies to assess overall training program effectiveness and impact.

(7) Provides, in conjunction with the Superintendents of NFA and EMI, recommendations for staffing, funding, and other resource contingency plans -- as well as legislative and executive mandates and policies -- to formulate and update planning for training activities for national emergencies.

(8) In conjunction with the Superintendents of EMI and NFA, serves as the curriculum policy interface with agency program elements, other Federal agencies, State and local governments, private institutions, associations and post-secondary educational institutions involved in emergency management issues.

(9) Coordinates with the Office of External Affairs, and develops curriculum within the Five Year Curriculum Magagement Plan for international training efforts designed to maximize interactions with NATO and other nations on training activities related to such areas as strategic deterrence, international terrorism, and shared interests in natural and technological hazards.

WORKYEARS IN NFA

Question: We note that in the FY89 budget for the NFA, the estimate of work years has been reduced from 75 to 72. Wasn't that number 78 in FY86? Was that a FEMA or OMB determination? Was that reduction in line with other FEMA reductions?

Answer: The 1986 current estimate under the National Fire Academy budget program was 78 workyears. This was also the requested level in 1987. The reduction of 3 workyears in 1987 was the result of an internal adjustment required as part of the 1987 appropriation. The 3 workyears were taken from NFA site administration. The 1988 appropriation required another internal adjustment. Three workyears were again taken from NFA site administration rather than require the National Fire Academy to share any part of this reduction. The 1989 request included the reduction of the three workyears eliminated in 1988. You should also be aware that three workyears have transferred from site administration to NFA as part of the reorganization. To the best of our knowledge these reductions were in line with other FEMA reductions.

Question: We note that Congress restored 4 positions to USFA that had been cut by the Administration. Was there any connection to the reduction in NFA cuts?

- Considering the language of the Senate's report of the FY 1989 budget, do you believe it was the intent of Congress to reduce NFA staffing in lieu of USFA reductions?

Answer: As part of the 1988 appropriation, there was an increase of 33 workyears in certain areas of FEMA of which 4 were for USFA. These increases were to be absorbed by the Agency. This caused an internal adjustment. The Office of Training's share of this adjustment was a reduction of 4 workyears. One of these was taken from site administration under Civil Defense and three were taken from NFA site administration. We believe we have complied with the intent of the Senate's report by taking the reductions from NFA site administration rather than the NFA organization.

AUTHORITY OF NFA SUPERINTENDENT

Question: Indicate precisely the NFA Superintendent's authorities relating to NFA funds and FTE authorities.

Answer: The National Fire Academy program of the FEMA budget has four (4) lines. They are:

1. Instructional Programs and Materials
2. Training Field Deployment Systems
3. Resident Programs
4. NETC Site Administration

The Superintendent has full control of the funds and FTE's in the categories of Training Field Deployment Systems and Resident Programs. He has full control of the S & E funds and FTE's and partial control of the program funds in the category of Instructional Programs and Materials. A total of $227,000 in program funds are used for long-term evaluation, course accredidation, and curriculum planning. The funds are outside of NFA. The Superintendent has no control of the funds and FTE's in the NETC Site Administration category, however, he does work with the Dirctor of Training to ensure that the NFA support requirements are provided.

CONGRESSIONAL INQUIRIES ON NFA

Question: Who has signature authority on Congressional inquiries regarding the NFA?

Answer: Correspondence addressed to the Director, FEMA, from Members of Congress may be signed by the Director or may be delegated for signature to the Deputy Director, Chief of Staff, Associate Directors, Administrators, Regional Directors, or Office Directors on matters for which they have assigned responsibility.

NFA SUPERINTENDENT

Question: To whom does the NFA Superintendent report on policy matters concerning NFA?

Answer: The NFA Superintendent reports to the Director of Training.

NFA INSTRUCTORS

Question: Are there any plans to use NFA instructors for other than fire-related courses?

Answer: NFA instructors will not be used for other than fire-related courses.

SMOKE ALARMS FOR DEAF AND HEARING IMPAIRED

Question: How effective and readily available are alarm systems for the deaf and hearing impaired? Do any codes require the installation of such systems in hotels and public buildings?

Answer: Effectiveness and Availability

The National Center for Health Statistics estimates that there are more than 21 million hearing impaired citizens in the United States. Few residences of the hearing impaired have a smoke alarm that is effective for them. In general, alarms for the hearing impaired people are either very expensive or marginally effective. For example, it has been determined through use that the most commonly available smoke detector, one that uses a flashing strobe light as an alert signal, is not very effective in gaining a hearing impaired person's attention, particularly when the person is sleeping. An informal survey of hearing impaired people completed recently in a Maryland suburban county indicated that 40% will respond to a vibration alarm, 50% prefer a light alarm, and the remainder have a variety of preferences including fans, dogs, buddies, or a combinnation of vibration and light.

Several efforts are underway to address the effectiveness of alarm systems for the deaf and hearing impaired. The National Association of Deaf indicated that the Architectural and Transportation Compliance Board, supported by the National Institute of Disability and Rehabilitation Research, is conducting two studies. The one study is focusing on visual signals for office buildings and the second study is examining signals for sleeping areas.

Another important effort is being carried out by the Soroptimist International of Frederick County, Maryland, in cooperation with the Maryland State Fire Marshal's Office. This local organization, in carrying out local fire safety programs with funds from the U.S. Fire Administration's Community Volunteer Fire Prevention Program, discovered that current smoke detector technology for the hearing impaired is not regulated by any testing laboratory standard. They are currently working with Underwriter's Laboratory (UL) to begin the development process for a new standard for smoke detectors for the hearing impaired.

Installation in Hotels and Public Buildings

On a national level, suggested standards for smoke detectors for the hearing impaired can be found in the National Fire Protection Association's (NFPA) Life Safety Code 101 with specific reference to NFPA Code 72 (Section G) concerning detection systems. At State and local levels nationwide a variety of legislation and requirements exists for hotels and motels:

- Florida requires that one smoke detector with strobe lights per 50 rooms be available but not exceed a total requirement of five alarms
- California's Title 14 requires two smoke alarms per 50 rooms and in all public spaces
- Marriott and Hilton Hotels have corporate policies requiring smoke detectors for hearing impaired

To date, however, no jurisdiction or corporation has mandated a fixed installation of smoke alarms for the hearing impaired.

Needs

Of the 37 states that require smoke detectors in residential dwellings, only four require smoke alarms for the hearing impaired. Additionally, each of the 37 requires smoke detectors to have a major laboratory listing. Unfortunately, smoke detectors for the hearing impaired fail to meet this requirement.

There is a need for the development of an economical smoke alarm for the hearing impaired that meets all safety requirements and can be listed by a major testing laboratory. The technology exists for the design of a number of low cost devices. The ultimate device will be a control sensor or transmitter that will trigger vibration or light alarms in both sleeping and living areas.

ACCOMPLISHMENTS OF THE OFFICE OF TRAINING

Question: What are the accomplishments of the Office of Training? What do you hope to achieve? How has the Office affected the National Fire Academy? What future changes do you expect?

Answer: Although the Office of Training has existed only since December 21 of last year, its impact on the National Emergency Training Center (NETC) has been positive. Some of the most significant accomplishments and trends for the future include:

- First and foremost is the issue of vacancies. Filling existing vacancies at the National Fire Academy (NFA) and the Emergency Management Institute (EMI) has been a top priority of the Agency. Since August 30, 1987, 11 vacancies have been filled at NFA and 11 at EMI. Three positions at each of the institutions are funded under Title III/SARA. The 39 employees presently on board at the National Fire Academy represent the highest staffing level in many years. We anticipate that all of the remaining few vacancies at NFA will be filled within a few months.

° A new spirit of cooperation has been fostered between the two training arms of FEMA. Staff coordination and cross fertilization of program ideas is at an all time high. For example, EMI's Superintendent, Laura Buchbinder, and NFA's Superintendent, Bill Neville, sponsor weekly lunches with students from their respective schools to share experiences and enhance cooperation. In addition, areas of unnecessary duplication are being identified which will result in better allocation of resources for both schools. This is especially important in the distribution of hazardous materials training funds and responsibilities.

° Under the Office of Training organization, both Superintendents report directly to the Office of Training Director and their performance is reviewed by the FEMA Director. Full authority for curriculum development and management has been returned to the Superintendents as have all staffing decisions affecting their academic programs.

° The policy concerning use of the National Emergency Training Center facility has been clarified. The primary mission of NETC continues to be training of NFA and EMI students. Other users will be given access to the facilities as long as they do not interfere with this stated mission and as long as they fund any costs incurred. NFA and EMI will no longer pay the expenses for use of the facility by other groups.

° EENET, the Agency's highly successful videoconference network, is now a part of the Office of Training's new Education Technology Division. Using satellite technology, EENET beams network-quality training and education activities directly to regional, State, and local viewing centers. During 1988, 15 broadcasts are scheduled, including one 16-hour course on hazardous materials. NFA will present four training teleconferences this year on topics ranging from "Arson Investigation" to "Hazardous Materials: Protective Clothing". The broadcasts reach approximately 75,000 live viewers, with over 100,000 more watching rebroadcasts at a later date. This is especially important for the fire service due to shift work and volunteers who cannot always view the broadcasts live. Fire and emergency management personnel make up the majority of the audience.

The success of EENET can be best measured by its loyal following. Fire service personnel across the country count on the broadcasts to supplement and expand their knowledge. It provides up-to-date information and an opportunity to call in and get answers from a panel of experts. EENET is good television that instructs, not merely instruction via television. EENET has been broadcast out of leased studios in the Washington, D.C. area. Beginning this Spring, live broadcasting will originate from new studio facilities on campus at NETC. EENET is one of the Agency's most effective training tools and one that will grow in importance under the Office of Training.

° An integrated information management system is now in place at NETC with a communication link to Headquarters. The system serves both the Office of Training and the U.S. Fire Administration.

For many years, managers depended on stand-alone data bases with little standardization from one system to the next. Now we have a state-of-the-art system that contains all NETC information--personnel, procurement, student enrollment, property, budget and so forth. All managers have access to this information and it is linked to FEMA's computer system at Headquarters. Additionally, almost every staff member at NFA and EMI now has a personal computer. NFA published their academic catalog this year using desktop publishing, the first such major endeavor in the desktop publishing area within FEMA.

FEMA strongly supports the fire programs. Creation of the Office of Training is a positive step in making training and education a central focus within the Agency. We have been through some difficult times, times of uncertainty. We have made the necessary corrections and we believe that we are on the right course.

FULL STAFFING FOR NFA

Question: How many additional people (not FTE's) would you need to hire to have the Academy fully staffed? What would their responsibilities be?

Answer: It would take the addition of ten full time faculty members and three support personnel to staff the Academy to its maximum practical capacity. The additional faculty would assist in ongoing programs and courses along with new course development for hand-off deliveries and course revisions with emphasis on more training of instructors who can return home and train other instructors for a multiplier effect.

ADJUNCT FACULTY

Question: What percentage of the teaching staff is adjunct faculty? Are they adequately supervised? Why aren't there more permanent staff?

Answer: Approximately 90% of the National Fire Academy (NFA) resident teaching staff is adjunct faculty. There is no permanent teaching staff for the field program, and all field program deliveries utilize adjunct faculty. In addition to actual training delivery, the NFA permanent staff are responsible for course administration and for providing subject matter expertise in the development and revision of courses.

The NFA resident staff monitor and assess the performance of adjuncts by fields of expertise.

The permanent staff level at NFA represents the maximum practical level within approved FTE and funding levels.

NFA FIELD PROGRAMS

Question: What do you do to ensure that States are making good use of Academy field programs?

Answer: To date, NFA has handed-off 13 courses to State and local fire training delivery systems. For every hand-off, we provide one complete instruction package including an instructor guide, one student manual and the supporting audio-visual materials. We rely on a reporting system that indicates the utilization of this material as a base for providing additional student manuals free to the training systems. As of March 1, 1988, there have been 10,586 course deliveries to 271,024 fire and rescue personnel at the local level.

In the past, NFA staff and project officers made on-site visits to State training facilities and met with State and local training officials to assess and analyze use of NFA programs. Budget constraints have forced a significant reduction in these visits.

USE OF NETC BY OTHER GROUPS

Question: Does fire program money go to support the use of NETC by other groups?

Answer: Funds for the operation of NETC come from four different budget program areas, two of which are fire programs. In the past, many outside groups have used the NETC facilities. To clarify the priority for use of the facility, an Agency Instruction was issued on 1/12/88. This Instruction clearly states that NETC facilities are made available, on a space available basis, to outside groups conducting activities closely related to and in direct support of the missions of the Emergency Management Institute, the National Fire Academy, or the U.S. Fire Administration. Since the fire program provides a portion of the funds for the operation of the site and the facilities are made available to selected outside groups on a space available basis, fire funds could be considered to be used to support the use of NETC by other groups. In order to correct possible inequities in the current operation, outside groups are being required to pay for any direct expenses associated with their use of the facilities and we are considering the establishment of a reimbursable account which would offset the indirect expenses.

FIRE SUPPORT FOR SITE ADMINISTRATION

Question: Why do the fire programs support a disproportionate percentage of Office of Training site administration costs? What tasks are assigned to their employees?

Answer: The amount of money provided from the fire program has not changed since the time when the National Fire Academy was the sole occupant of the Emmitsburg facility. When the Emergency Management Institute (EMI) was relocated to Emmitsburg from Battle Creek, Michigan, Congress appropriated funds and staff from the Civil Defense program budget only for the additional costs associated with the EMI co-location. Now that the educational programs of the two institutions have stabilized, we believe it is appropriate to work with the Congress to adjust the funding through the budget process. However, all proposed methodologies for apportioning site costs among NETC tenant organizations (based on a mix of student days, students in attendance, and course offerings) do not support the contention that the fire programs provide a disproportionate share of site support costs.

The funding for site administration supports a common site operation and educational program support activity. This includes site operation and maintenance, facility operations, property mangement, budget and fiscal operations, admissions and registrations, student services, procurement, personnel, administration, motor pool, library services, and media support. The site administration activity serves the two training institutions as well as the United States Fire Administration. Because it is a common support activity the employees funded from site administration work across all program areas. This maximizes resource utilization and reduces operation costs by centralizing the support services for all program offices located at NETC. In addition to the site operation and administration, funds from the NETC Site Administration budget areas are used to support the Office of the Director of Training, the Program Development and Evaluation Division, and the Educational Technology Division. The Office of the Director is responsible for the coordination of activities between the two training institutions, and with the sponsoring program offices throughout the Agency. The Program Development and Evaluation Division is responsible for long-term training development, review and evaluation programs; and the Educational Technology Division is responsible for the Emergency Educations Network program, Media Support, and the Learning Resources Center and for providing information system applications for NFA and EMI training activities.

ADDITIONAL ACTIVITIES FOR NFA

Question: What additional activities would the Academy undertake if it were not taxed so heavily to pay for administration?

Answer: Funds within the National Fire Academy budget program are appropriated for specific purposes such as Instructional Programs and Materials, Training Field Deployment systems, Resident Programs, and NETC Site Administration.

Additional activities the Academy could undertake with additional funding would include the training of instructors who return to their local communities and more off-campus deliveries to reach a greater audience of fire personnel. Also, the Academy could hold more special programs to reach a wider audience of key decisionmakers in the fire field. Additional funding also would permit a reduction in the present backlog of students requesting certain residence courses.

STAFFING LEVEL IN EMMITSBURG

Question: General Becton, your staff has told my office that they have not been able to fully comply with the agreement we reached last year concerning staffing at the National Emergency Training Center in Emmitsburg. As you know, this agreement was included in the Subcommittee's report last year, which was later incorporated by reference into the Continuing Resolution in Section 107 of P.L. 100-202. What are the current staffing levels as of April 26, 1988 for both the NETC and the US Fire Administration in Emmitsburg?

Answer: The current Office of Training staffing level as of April 26, 1988 at the National Emergency Training Center is 116. The current staffing plan includes 11 vacancies.

The current staffing level as of April 26, 1988 for the United States Fire Administration is 16. The USFA has six vacancies. Two of the vacancies are being filled by two full-time temporary clerks. USFA's authorized strength is 20 FTE.

Question: Of the 114 positions you list as being part of the NETC full-time duty stationed staff, is it not true that 6 of these positions are not FEMA funded, but instead funded by EPA under Title III of the Superfund Act? Is it not also true that included in these 114 positions is at least 2 or 3 FEMA interns? What percentage of a FEMA intern's time at Emmitsburg is spent in class?

Answer: Six positions at the NETC are funded by EPA, three at the Emergency Management Institute and three at the National Fire Academy. There are currently five EPA-funded people at NETC. There are three interns assigned to NETC. Their time and costs are split between EMI and NFA. An intern spends approximately 30% of time in class.

Question: Given these figures then, FEMA has only 105 permanent positions at the NETC which it is funding. Doesn't that mean you are nearly 15% below complying with the agreement we reached last year, which was 120 permanent, duty-stationed, FEMA-funded positions at the NETC?

Answer: FEMA currently has 121 positions funded within the Office of Training of which 111 are currently filled not including the five EPA-filled positions. The agreement called for 122 positions at NETC. Subsequent to that agreement, FEMA's application of a Congressionally-directed reduction eliminated four of those positions and reduced the number to 118.

Question: In your March 31 letter to Senator Stennis, you indicated that last year's on-board level at NETC was 101 positions. Assuming that is correct, this means that you have only increased the number of FEMA funded permanent positions at Emmitsburg by four. How do you explain the Office of Training's inability to fill more of these vacancies, particularly since the staffing agreement reached with the Committee took place in mid-September of last year, over 7 months ago?

Answer: The NETC filled 40 positions, for a total of 141 filled. During the course of filling the positions, seven individuals resigned, four individuals transferred, one individual retired, and 13 individuals were selected or transferred to vacancies causing other vacancies. The current net increase in staff at NETC is 15. The reorganization of the Office of Training was made effective December 21, 1987. No personnel actions in regards to the Office of Training could be made effective before that date. New position descriptions were developed, necessary personnel actions prepared and mission and function statements written. After all position descriptions were classified and the personnel actions were approved at FEMA Headquarters, the first Office of Training vacancy announcement opened on February 29, 1988 and closed on March 14, 1988.

While we have taken aggressive action to fill all the Office of Training vacancies as quickly as possible, we have encountered some problems in bringing the organization to full strength.

1. Additional vacancies being created as a result of in-house people being selected for other positions.

2. The transfer of the on-site personnel officer to another agency.

3. An EEO complaint resulting from the selection made in one NFA position. This has caused a delay in filling other NFA vacancies pending resolution of the complaint.

4. Funding constraints with EMI.

5. Resolution of an internal reorganization within EMI and NFA.

LAG IN FILLING VACANCIES

Question: The Office of Training has told my staff that it takes 6 months to fill each position which is vacant in Emmitsburg. I have heard reports from some civil servants within FEMA that this is exaggerated. How does this figure compare with each of the other portions of FEMA.

Answer: We recently completed a survey of time needed to fill positions in Emmitsburg. The average recruitment took 16 weeks. The time required to fill some vacancies was as little as 5 weeks. It is difficult to average recruitment time for other parts of FEMA because different kinds of positions require varying amounts of recruitment time.

OFFICE OF TRAINING IN BUDGET

Question: The Committee's report last year asked the agency to develop a detailed explanation of the activities and actions of the Office of Training. In reviewing your FY 1989 budget justifications, there is almost no discussion of the Office's activities. Why were the Office of Training and your Budget Office unable to provide the information which the Committee requested, since they had nearly five months, from September to February, to prepare it?

Answer: The FY 1989 budget justification package was developed in July 1987 and transmitted to OMB in early September 1987. The committee report was issued at the end of September 1987.

The Office of Training was formally established on December 21, 1987. Since that time efforts have been underway to realign the previous Training and Fire Programs Directorate into the new organization. Efforts are also underway to transfer the training functions and resources from other elements of FEMA. The Office of Training, as it was proposed, is not yet fully operational.

The budget is programmatic rather than organizational. This is why there is little or no mention of the Office of Training or its predecessor, the Training and Fire Programs Directorate. As such, each program and program element is justified on its own merit. The organization pulls these programs together to provide a comprehensive and cohesive educational program. The Office of Training is attempting to identify all the resources for training in FEMA and will propose their inclusion in future budget submissions as one program.

Question: I'm also told by the Office of Training that they have been denied permission to prepare for those same budget justifications an explanation of how it is integrating all of FEMA's training programs, not just those at the NETC. Is this true? If so, why? The Committee's Report also asked for this information in last year's report. Please provide that information for the Committee prior to its markup of its FY 1989 appropriations bill.

Answer: The FEMA budget is programmatic rather than organizational. The training programs of the Emergency Management Institute and the National Fire Academy are identified separately. In fact, the resources for the Emergency Management Institute come from both the Training and Education program under Civil Defense and the Emergency Management Institute program under Training and Fire Programs. An explanation on how the various training programs are integrated may be very difficult to include in the budget justification package since each program is justified independently based on resources being requested and the authority to conduct the activity.

The Office of Training is responsible for the administration and oversight of FEMA training. Program managers and staff office directors are accountable for coordination of all trainingrelated activities with the Office of Training. We have requested all program managers and staff office directors to identify the extent of their training-related activities. This information will be provided to the committee as quickly as possible.

TRAINING POSITIONS IN WASHINGTON

Question: How many positions does the Office of Training have in Washington, D.C.? How many does it plan to have in Washington by the end of FY 1988? FY 1989? What is the average period of time it takes to fill one of these vacancies? Why have any positions been filled in Washington, DC when so many vacancies remain in Emmitsburg, particularly if there is no action at this time to further integrate FEMA training programs into the new office as evidenced by the absence of any information on this subject in your budget justification?

Answer: The Office of Training has eight positions currently filled in the Washington, D.C. office, of which six were already located there. There are currently seven vacancies. We plan to have 15 positions in the D.C. office by the end of FY 1988. The same 15 positions are planned for FY 1989.

NEW TRAINING PROGRAMS

Question: What new training programs have you established in FEMA since creation of the new Office of Training? What new training programs do you plan to establish during the rest of FY 1988? in FY 1989? Will any of these new programs be established at Emmitsburg, as last year's Committee report directed you to consider? Where will the positions and funds for any of these programs come from?

Answer: No additional FEMA training programs have been established within the Office of Training since the creation of that office. No new training programs are anticipated at this time. There have, however, been some adjustments to existing programs. These will be addressed later. The Office of Training is responsible for the administration and oversight of FEMA training. Program managers are responsible for coordinating all of their training-related activities with the Office of Training. We are currently working with the program managers to identify the extent of their training-related activities.

Since EMI was understaffed at the beginning of FY 1988, the addition of new staff has not resulted in "new programs". There has, however, been some increased activity in the area of hazardous materials. New hires have allowed greater faculty involvement and oversight in development of new courses and the delivery of existing ones with a commensurate increase in course quality. In addition, EMI was able to be responsive to a request from Atlanta, Georgia, for specialized training to help the city prepare for the Democratic National Convention and to provide additional training in preparation for a major Radiological Emergency Preparedness exercise in another State. This assistance was not in original FY 1988 work plans and could not have been provided without additional staff resources. In FY 1989, EMI will be placing additional emphasis on civil defense training to support implementation of NSDD 259 and the establishment of a survivable crisis management capability at the State and local level.

The National Fire Academy (NFA) has established a Volunteer Initiative Program (V.I.P.) which is being pilot tested in FY 1988. This program is specifically designed to attract volunteer fire personnel to NFA courses offered on the National Emergency Training Center campus. Volunteer fire personnel have generally found it very difficult to attend the normal two week, on-campus, courses since they would have to take leave from their full-time jobs. The V.I.P. is a five-day, on-campus, course offering that utilizes a week-end, and, thereby, requires only 3-4 days of leave from a full-time job. Our schedule for FY 1989 includes 6 of these "5-day VIP's". Funds and positions for this program come from existing NFA resources.

Programs have been initiated on the Emmitsburg campus for greater interaction between the students from NFA and the Emergency Management Institute students. This has proven to be very successful.

SUBCOMMITTEE RECESS

Senator PROXMIRE. The subcommittee will stand in recess until 10:10 a.m. Monday, May 9, when we will take testimony from public witnesses. The hearing will be in room SD–124 in the Dirksen Building.

Thank you very much, General. You are a very impressive witness. You have done a fine job.

General BECTON. I appreciate it.

[Whereupon, at 11:00 a.m. Tuesday, April 26, the subcommittee was recessed to reconvene at 10 a.m. Monday, May 9.]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1989

WEDNESDAY, JUNE 8, 1988

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10:08 a.m. in room SD–138, Hon. Jake Garn presiding.

Present: Senators Proxmire, Johnston, and Garn.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ADVANCED SOLID ROCKET MOTOR PROGRAM

STATEMENT OF DR. JAMES C. FLETCHER, ADMINISTRATOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ACCOMPANIED BY:

- **REAR ADM. RICHARD TRULY, ASSOCIATE ADMINISTRATOR FOR SPACE FLIGHT, HEADQUARTERS**
- **J.R. THOMPSON, DIRECTOR, GEORGE C. MARSHALL SPACE FLIGHT CENTER**
- **JOHN W. THOMAS, ASSISTANT TO THE DIRECTOR, GEORGE C. MARSHALL SPACE FLIGHT CENTER**

OPENING STATEMENT OF SENATOR GARN

Senator GARN. The hearing will come to order. The Democrats have decided to trust me, I guess, once again. I have had some experience at this podium over 6 years, but not recently. Rather than keep the witnesses waiting, we will proceed.

I find myself in a rather difficult position at this hearing. I am known as one of the principal proponents of a revitalized and vigorous national civil space program, but I am also the one who requested this hearing to determine whether it is prudent to invest the sums necessary to upgrade the solid rocket motor boosters for the shuttle system.

Unfortunately, we are confronted with a budgetary circumstance which all but precludes the likelihood that Congress will enact appropriations bills which fully funds NASA and the National Science Foundation at the levels requested by the President.

In fact, it is probable that we will have to make reductions from the President's request for NASA totaling nearly $1 billion. From National Science Foundation, we may have to extinguish any hope of any real increase in basic research activities. We, therefore, are forced to critically review all requests with the perspective of not whether a program is meritorious or beneficial but, rather, to determine if it is absolutely necessary for the overall program in fiscal 1989.

CONGRESSIONAL DECISIONS QUESTIONED

Dr. Fletcher, you have closely followed the Congressional budget debate. I don't have to tell you that this is an exercise boiling down to which of our children we must sacrifice. You know how strongly I feel about that and how disappointed I am in this Congress and previous Congresses for spending less than 1 percent of the total national budget of this country on space research and development. It is a tragedy; it is a shame. In my opinion, it is a disgrace to this Congress, who does not have the courage to make proper decisions on the budget.

But more sadly, I suppose, they are not willing to make decisions for the future of this country. Most of them are made on the basis of, "What makes me look good between now and next November rather than what is the country going to be like and what benefits in technology are we going to have 10 or 15 or 20 years down the road?"

So we are sacrificing some of our children, and it goes far beyond my bias toward space and research and development. It goes to the technological base of this country and where we are going to be in technology versus the Soviet Union and other friendly countries, as well, around the world. But that is the fact of life, and you know it as well as I do from all the conversations that we have had.

GOVERNMENT OWNERSHIP OPPOSED

We are simply going to have to make decisions that are very difficult, but they are decisions that will be made in the next few weeks. I previously made clear my very fundamental disagreement that the notion of government ownership of the solid rocket motor plant will have any beneficial impact on the quality or efficiency in the production of these motors.

I also recognize that there is an immediate implication that that is an attempt by me to defend Morton Thiokol because it is in Utah.

I want the record to very clearly show that I really don't give a damn where it is built. Even if you were to announce today that you were going to build a government-owned facility in Utah, I would oppose it. I am opposed to the concept of the government getting involved. I think if it makes as much sense on that theory, then I suppose we ought to nationalize all the shipbuilding facilities in this country on the basis that the Navy could make a case that they would like to control the production of their ships; and I suppose we could make the case that the orbiter, then, should be built in a government-owned facility because NASA would have more control over it; or how about the main engines or how about airplanes?

"Let's get rid of that, and let's have government-owned facilities." So I want that very clearly understood: I am opposed to the government being involved. I spent 14 years in this body, and I have yet to find out where government did something very well, regardless of which department of government we are working with, compared to the private sector.

Let that be stated very clearly where my objection comes from. It is not trying to do something for Morton Thiokol, because everybody should fully understand that whether you are building a government facility or want to or not, that Morton Thiokol and every other contractor would have to bid on an advanced solid rocket motor, and there certainly is no guarantee of which company would receive that.

I don't know how to make any more clear that I think you are going down the wrong track to even propose a government-owned facility in this particular field. I also want to get it off my chest that I think the changes that were made to allow different bidding on a privately owned facility came as a result of my complaints to of OMB and what OMB forced on you.

But nevertheless, I think the bias is there; that was what you wanted from the very beginning, a government-owned facility. I think that is prejudged, and I think the other proposals are window dressing. When this is over, I think we will find that we are going to end up with a government-owned facility, whether I like it or not.

IMPACT OF BUDGET REDUCTIONS ON SOLID ROCKET MOTOR PROGRAM

I reserve judgment on whether other aspects of the proposed advanced solid rocket motor program are compelling enough to rank sufficiently high in priority so as to survive the devastating reductions which will have to be made in the President's request.

As an example, the House Appropriations Committee previously recommended the request for the shuttle program to be reduced by $205 million. It is possible that even further reductions in this activity will have to be made upon formal committee allocation revision required by the recent adoption of the budget resolution.

What I find troubling with the House recommendation is that while new technology development is embraced, sums needed to carry out the existing program in a safe and efficient manner are being shortchanged.

I know that the House did not make its recommendations because it felt the shuttle operations were overly funded. Indeed, we continually hear of concerns over how a few more tests over some additional checkout procedures or supervision will increase our confidence in margins of safety.

Rather, the House was forced to rank the relative priority of an upgrade in the solid rocket motor against current shuttle operational needs. I am not convinced that the decision of the House makes good sense. Furthermore, I am very concerned that NASA has inadequately considered alternative development strategies such as an unmanned heavy lift version of the shuttle system known as Shuttle C.

TRADEOFFS BETWEEN NASA AND OTHER AGENCIES

It is clear that we will have to surely consider funding decisions which will choose between very appealing programs within the levels requested for NASA. Moreover, we will be forced to make tradeoffs between NASA programs and those of the NSF, Veterans Administration, EPA, FEMA, and HUD and housing programs or any one of the other dozens of agencies within the subcommittee's jurisdiction.

Also, in the context of our overall subcommittee allocation, we must determine if the programs within the HUD Subcommittee deserve priority over the needs addressed by agencies under the jurisdiction of other subcommittees.

I certainly don't look forward to making these choices, but I believe that it is absolutely necessary that we have the best judgment and assessments available before attempting to make those decisions.

I certainly thank you, Dr. Fletcher of NASA and Dr. Stever of the National Research Council, for accommodating this subcommittee, particularly on such short notice.

I hope this hearing will provide us a good assessment of the current status of the redesigned solid rocket motor as well as the requirements for an advanced version of this motor.

As you notice, the Democrats wouldn't trust me very long alone. [Laughter.]

Senator Johnston, I have just completed my opening statement, and I will return the chair to you.

SENATOR JOHNSTON'S OPENING REMARKS

Senator JOHNSTON [presiding]. I hope Senator Garn didn't say anything important while I was gone. [Laughter.]

Today, we will hear from the NASA Administrator, Dr. James Fletcher, and Dr. Guyford Stever, representing the National Research Council group that has been tracking repairs on the solid rocket booster regarding the proposed advanced solid rocket motor development program.

NASA has requested $8 million in its fiscal year 1989 budget for advanced solid rocket motor development and proposes more requests in the near future. There has been a good deal of discussion regarding the possible construction of a government-owned, contractor-operated facility to committee, and I am sure that this is one of the topics that we will be covering in today's hearing.

Our first witness this morning is Dr. Fletcher, who will present the administration's position on the advanced solid rocket motor program.

I might say, Dr. Fletcher, we are still working on trying to find money for the space program, and if I can only get Senator Garn to support it, we will be able to find that somewhere. [Laughter.]

I just wanted to assure you that we are continuing to work on that. With that happy statement, I would like to direct you to proceed with your statement.

Dr. FLETCHER. Thank you, Mr. Chairman and members of the subcommittee. Before I make my report, I would like to submit my formal statement for the record.

Senator JOHNSTON. Without objection.

[The statement follows:]

STATEMENT OF DR. JAMES C. FLETCHER, ADMINISTRATOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

I welcome the opportunity this morning to review the Advanced Solid Rocket Motor (ASRM) program. Solid fuel propulsion systems remain an important element of our nation's capability to launch spacecraft. Their continued development is a national requirement.

The ASRM is required to enhance the safety and reliability of the Space Shuttle over the many years in the future that the Shuttle will remain a principal launch vehicle of the United States. The ASRM also will enable us to achieve significantly improved performance over the Space Shuttle's current Solid Rocket Boosters (SRB's). The ASRM will provide the Shuttle with the capability to lift heavier payloads into orbit, having a design goal of an additional 12,000 pounds. Given the fact that the Space Shuttle will be flying throughout the first decade of the next century, this improved performance on each flight will provide significant capabilities and efficiencies to the nation's space transportation systems. Finally, the new booster will establish a strong technical foundation upon which advances in solid fuel propulsion systems will depend. ASRM will ensure continued U.S. leadership in what is now an internationally competitive field.

At present, NASA has under test and development the Redesigned Solid Rocket Motor (RSRM). This system corrects deficiencies of the Shuttle's initial SRB and improves safety margins although we believe it is not a long-term solution. Three areas of the SRB were identified for rework. The field joint, which was identified as the cause of the STS 51-L accident, was extensively improved. We also redesigned the case-to-nozzle joint on which we saw significant distress during post-flight analyses. These redesigned joints have demonstrated outstanding performance during testing. In fact, we have had to introduce deliberate flaws to the joints to evaluate their redundant characteristics. The outer boot ring (OBR), which protects the nozzle flex bearing for reuse, was redesigned for additional safety margin even though it has never failed to perform its function in flight or in testing. In full-scale development firing at Morton Thiokol, the OBR design selected for flight has shown the best results we have seen in the test and flight program. Considerable test and evaluation remains before the RSRM will be certified for STS-26 and subsequent missions, but what we have seen so far gives us confidence in its performance. We believe it can provide safe, reliable service as an interim design until the ASRM can be phased in.

NASA believes that for reasons of reliability and safety over the long haul, technology development and performance, an advanced solid rocket motor is absolutely essential. Enhanced reliability and safety will be realized through both ASRM design and manufacturing. Several design features of the ASRM will improve the reliability and safety of the Space Shuttle:

- Field joints are designed to close rather than open when the motor is pressurized at ignition, eliminating the most likely cause of joint leakage.

- The number of factory joints is reduced through use of weldable case materials, eliminating four criticality 1 failure modes.

- The ballistic design obviates the necessity to throttle the Space Shuttle Main Engines (SSME) during the region of maximum dynamic pressure, thus eliminating or reducing approximately 175 criticality 1 and 1R modes for SSME and Auxiliary Power Units.

- The nozzle redesign reduces the number of parts and the number of joints, eliminating about sixteen criticality 1 and 1R failure modes.

- The asbestos-bearing materials are replaced.

NASA has concluded that a new, modern manufacturing facility is required to achieve the level of process control and automation which is needed for safety, high quality, and reproducibility. This production facility will introduce stringent process controls and automation features into nearly every operation in the production of the motor. To achieve the intended level of quality and reliability, the process flow and the resultant facility must be optimized. Further, cleanliness and environmental controls will be provided for critical processes. Processes will be automated where beneficial. Inline inspection and evaluation will insure integrity from step to step, and industrial safety and environmental protection measures will be fully integrated into the production. The new plant must also be adaptable for change and growth in terms of motor size and quantities.

The approach taken by NASA is outlined in the Space Shuttle Advanced Solid Rocket Motor Acquisition Plan submitted to Congress on March 31, 1988. This report reviews the procurement strategy for ASRM and discusses both implementation plans and schedules.

Proposals for the ASRM development will be solicited to include a facility, to be designed, built, and operated by the selected contractor, on a government site for ASRM test and production. In keeping with the President's new policy of encouraging commercial initiatives, offerors will also be required to propose a private financing option for the new ASRM facility to be located on the tentative government site. To further explore privatization opportunities, NASA will also solicit optional proposals for a privately owned facility located at a site of the offeror's choice.

Three government-owned sites have been identified: the Kennedy Space Center in Florida, the Stennis Space Center in Mississippi, and Yellow Creek in Mississippi. A NASA Site Evaluation Board is presently evaluating these candidate sites. The selected government site will be identified in the ASRM Request for Proposal (RFP). Two private sites were identified by companies as possible candidates for the ASRM facility. Morton Thiokol identified a site in Promontary, Utah. Hercules/Atlantic Research Corporation identified a site in Montgomery, Alabama. However, Morton Thiokol recently announced it will not participate in bidding for the ASRM and will concentrate its energies and resources upon the RSRM. All proposals will be evaluated on a number of technical and business factors, including the total cost to the government over the life of the program, the ASRM delivery schedule, and the effect of the final facility site selection on public safety.

NASA's program for the ASRM provides a central role for the private sector. Private companies will design and build the new booster rocket. They also will design, build, and operate the new booster's manufacturing plant. In addition, we are encouraging private financing of the ASRM facility as well as a privately owned site for the plant's location.

The schedule we have laid out for ASRM a is realistic one. With Congressional agreement, we plan to release the ASRM RFP in July 1988 with a contract awarded in May 1989. First flight of the ASRM is targeted for 1994.

Currently, NASA is taking the necessary steps leading to the ASRM design and development procurement. The RFP will be finalized by the end of this month and ready for release. The Source Evaluation Board (SEB), which will evaluate the offerors response to the RPF, has been appointed. Environmental Impact Statements (EIS) for each candidate location are under way. All affected local, state, and federal agencies, in addition to the general public, are being notified of these studies. And, as I noted earlier, the Site Evaluation Board is assessing proposed government sites.

Mr. Chairman, the ASRM program is an important program to NASA and to the nation. We have laid out an overall development plan that, in my mind, is well conceived and realistic. Our procurement strategy is fair and balances opportunities for the private sector with protection of the national interest in the ASRM. Your support and that of your colleagues on the Subcommittee have been vital to the progress NASA has been making. I strongly urge your support of the ASRM so that this progress can continue.

Before I close, I know that you share NASA's urgent concern over the supply of ammonium perchlorate (AP) now significantly reduced with the recent destruction of one of the two production plants in the U.S. for this key ingredient of solid rocket fuel. The Shuttle's SRB's use significant amounts of AP, which is also ultilized in expendable launch vehicles. NASA is working closely with the Department of Defense to assure a timely resumption of production and the rebuilding of an adequate AP supply for the nation's future needs. In the allocation decisions which must be made quickly, we will assure that all elements of the President's National Space Policy--the civil, commercial and national security--are fairly supported.

At this time, my colleagues and I would be happy to answer any questions you may have.

DR. FLETCHER'S OPENING REMARKS

Dr. FLETCHER. I will give a brief oral report, but let me first comment on yours and Senator Garn's statements. I think it is just unbelievable to us at NASA that some of the cuts being talked about in the space program are seriously being considered. NASA really has its act together right now and we are ready to fly this August. That is only a month after next.

We have a good direction for the space program, which is outlined by the President, and all of us worked on it. We have a well thoughtout program for the rest of this decade and on into past the turn of the century.

The space station is now on firm foundation. It is well organized. We have an adequate reserve in the program to take mind of contingencies. It is almost unbelievable to us that the kind of cuts that are being considered are even seriously considered.

ADVANCED SOLID ROCKET MOTOR PROGRAM

But let me then turn back to the ASRM, which is the subject of this hearing. I do welcome the opportunity to review the ASRM program. For those that don't know what it stands for, the advanced solid rocket motor program, I will just use ASRM.

Solid rocket propulsion systems do remain an important element of our nation's capability to launch spacecraft. It doesn't matter whether it is the shuttle or any other spacecraft; they all require solid rockets. Their continuing development is a national requirement.

As you know, the ASRM is required to enhance the safety and reliability of the space shuttle well into the future. The ASRM also will enable us to achieve significantly improved performance over the space shuttle's current solid rocket boosters.

At present, NASA has, under its test and development, as you know, the redesigned solid rocket motor, the ASRM. This system does correct deficiencies of the shuttle's initial SRB and considerably improves safety margins, but we believe it is not a long-term solution.

SAFETY AND RELIABILITY

Let me comment briefly on the issue of safety and reliability for the shuttle and the ASRM. Several design features of the ASRM will enhance the shuttle in this regard. Let me just mention two.

First, the field joints are designed to close rather than open when the motor is pressurized at ignition, thereby eliminating the most likely cause of joint leakage.

Another point, the ballistic design removes the necessity to throttle the space shuttle main engines during the region of maximum dynamic pressure, maximum q, thus eliminating or reducing approximately 175 criticality 1 and 1-R modes for SSME in the auxiliary power units, both of which, of course, are of marginal reliability and are being addressed in other parts of the program.

Turning to the subject of a production plant, which is the production that was discussed by Senator Garn for the ASRM, NASA has concluded that a new modern manufacturing facility is required to achieve the level of process control and automation which is needed for safe, high-quality, and reproducibility.

This production facility will introduce stringent process controls and automation features into nearly every operation in the production of motors. As you know, three government-owned sites for the new plant have been identified: Kennedy Space Center in Florida; the Stennis Space Center in Mississippi; and Yellow Creek in Mississippi.

A NASA site evaluation board is presently evaluating these three candidate sites. In addition, two private sites were identified by companies as possible candidates for the ASRM facility.

Morton Thiokol, although they recently decided not to bid, did identify a site in Promontary, Utah. Hercules/Atlantic Research Corp. identified a site in Montgomery, Ala., and those will be considered.

NASA's program for the ASRM provides a central role to the private sector. Private companies will design and build the new booster rocket. They also will design, build, and operate the new boosters' manufacturing plant. In addition, we are encouraging private financing of the ASRM facility, as well as considering a privately owned site for the plant's location. This does address Senators Garn's concerns, and we have responded to those.

The approach taken by NASA in regard to the ASRM is outlined. This is a report, "Space Shuttle Advanced Solid Rocket Motor Acquisition Plan" submitted to Congress on March 31 of this year. This report reviews the procurement strategy for ASRM and discusses both implementation plans and schedules.

Mr. Chairman, the ASRM program is an important program to NASA and to the nation. Our procurement strategy is fair and balances opportunities for the private sector with protection of the national interest in the ASRM.

I strongly urge your support of the ASRM so that the progress we have made can continue.

Mr. Chairman, if you don't object, I would like Admiral Truly to give you a brief overview of what the ASRM program really is, and possibly, he might mention about the current flight status of the shuttle.

FLIGHT STATUS OF THE SHUTTLE

Senator JOHNSTON. Yes, Admiral Truly?

Admiral TRULY. Thank you, Mr. Chairman. I would like to touch on our present status of return to flight first, because I know that is also an important part of this hearing, and I will be very brief.

Our process, since the accident over 2 years ago, has been one of intensive review of the design and an open door to oversight from various committees, including Dr. Stever's committee that you will be hearing from this morning.

We have followed up that oversight and that design effort with an extensive test program. Essentially, we are getting to the completion of that test program, and it is the test program that is verifying the design and our readiness to flight.

Finally, down at KSC this morning, both of the solid rocket motors, the right and the left, are stacked and are being closed out. We are ready to mate the external tank to the solid rocket motors, and that could occur as early as later on this evening. It will be followed shortly by the rollover and the mating of the orbiter to the stack.

We will accomplish a flight readiness firing prior to flight. Our schedule does show we are still working to a late August liftoff, and we have been holding steady on that schedule throughout the past 30 days. So things in the recovery, I think, are going well.

ASRM PROGRAM

On the subject of the advanced solid rocket motor, again, I will be brief, but I would like to hit the highlights of how we came to this and why we need it and what the program is. It was clear in our deliberations following the *Challenger* accident that we had many design options, but some of them were of such a nature that they could not be achieved in any reasonable schedule.

So in many cases, we chose an option that was safe, but we left on the table one that would take years longer and just could not be incorporated, and we came to the conclusion very quickly that what we needed was a motor that was available to us, to the space shuttle throughout its life, which we anticipate will go out to the year 2005 or 2010; that we should set about on an advanced solid rocket motor program that took advantage, and had the time to take advantage, of some of these options that we didn't have the opportunity to take advantage of before.

This safety comes from two directions: One, these design choices; and second, the need for a new modern facility to build them in. It quickly became also obvious that having gotten into the consideration of an advanced solid rocket motor for safety and reliability reasons, that there were performance reasons that we could also correct for a little additional cost, and we presently have a design goal in the advanced solid rocket motor of an additional 12,000 pounds of performance, and our studies with the contractors tell us that we believe this is an achievement call.

There are some ways that performance, in addition to, obviously, making the shuttle more capable, can also relate to safety. For example, all of the flights that we previously thought would have to be flown at 109 percent of the main engine throttle schedule with an advanced solid rocket motor can be flown at 104 percent.

Likewise, those that we presently fly at 104 percent could be flown at 100 percent, lower power settings. The program facts of the advanced solid rocket motor is that the development program is just under a total of about $1 billion. There is the new facility; the brick and mortar, we estimate to be in the order of $200 to $300 million.

GOVERNMENT-OWNED/CONTRACTOR-OWNED FACILITY

There is, in that development cost, about $250 million in new automated equipment, so the importance of a new modern facility just cannot be overemphasized in this effort. It is essential for safety and reliability, we think, in the building of the motor.

We have had a good bit of deliberations about a government-owned or a contractor-owned facility. We initially came to the government-owned facility because of our early cost projections did indicate that that would be the cheapest and the best way to go.

Our facility plan, as outlined in the acquisition plan that we turned into the Congress, outlines the facility options that we are on. Essentially, they are now three.

First, we have a site evaluation team. We are looking at a government site, and there are two options that contractors are being asked to look at that site.

One would be to bid on it for a government-owned facility, and one would be to bid on a privately financed facility on that same site. It is these two options that give us clearly a level playing field and enough data so that the source evaluation board can consider the proposals when they come in.

Also, this level playing field also allows us to have a third option, which we do have, which is that contractors have been invited, should they desire, to bid a privately financed facility on the site of their choice.

As Dr. Fletcher said, last week we did get an indication from two of the contractors or the contractor teams that they will choose to bid under that option, although later, we were informed by Morton Thiokol that they would choose not to bid on the advanced solid rocket motor program.

So we need the ASRM. We need it for safety and reliability, and we need it for performance. To get the safety and reliability in the program we need a new facility. We think we have, in place, a procurement process that is going to allow us to fairly judge the bidder team's proposals, and the entire strategy does invite a strong commercial participation in the program.

We are ready to move out and search your agreement in the appropriations required for the advanced solid rocket motor. Thank you.

SOLID ROCKET MOTOR USAGE

Senator JOHNSTON. Thank you very much, Admiral Truly and Dr. Fletcher.

Dr. Fletcher, if the space shuttle will fly through the decade of the next century, how many solid rocket motors will be used?

Dr. FLETCHER. I don't have that figure on my fingertips. J.R. Thompson is here and might have a first guess, but we would have to provide it for the record.

J.R.?

[The information follows:]

Three hundred and eighty motors is the correct number.

Mr. THOMPSON. Yes. If I make the assumption that the shuttle is going to fly through the year of about 2010 and on the current schedule for the advanced solid rocket motor, which would start in 1994, we would be flying today's redesigned motor for about 80 flights, meaning 160 motors, and starting in 1994 with the advanced solid rocket motor through 2010 at a launch rate of about 12 a year, with that assumption, I believe it is about 380 motors that would have to be built.

Senator JOHNSTON. How many do you have today?

Mr. THOMPSON. We have got, well, today, we have got certainly the one flight set at the Cape, and we have got several more flight sets in process. The AP issue is one that perhaps you will get into a little bit later.

We have got propellant for four more, rather, a total of four flight sets. We plan to go under contract with Morton Thiokol with our current redesign, it would extend us out through 1997, as we phase off the redesign motor and up on the advanced solid rocket motor.

LOSS OF AMMONIUM PERCHLORATE PLANT

Senator JOHNSTON. By the way, do you expect the loss of the AP plant to impinge on the critical path of flights?

Mr. THOMPSON. I think Dick is the right person to address that.

Admiral TRULY. Mr. Chairman, the loss of the Pacific engineering ammonium perchlorate plant is a very serious issue that we are dealing with today. In the shuttle program, we have on hand ammonium perchlorate that already has been delivered for four flight sets or four flights. We had two flight sets worth of ammonium perchlorate in that plant that was lost.

We have already moved out, in coordination with the Department of Defense, to take the initial steps to rebuild the capability. The most urgent things that are required now is to get the remaining plant, the Kerr-McGee plant in Henderson, Nev., reopened in a safe way as soon as we can, and only then can the ammonium perchlorate need for the shuttle or to other users, and there are many, many of them, so that we can really assess what sort of impact it will be.

It is a very important and pressing issue at the moment. In the long term, however, we believe that over a period of the next 1 to 3 years, we can have our total capacity back, and in the outyears, we should not have this problem at the time that the advanced solid rocket motor comes into being.

Dr. FLETCHER. Mr. Chairman, just to answer that question, of course, this is just a best guess, but we are hoping, and we are a little optimistic, to get full capacity restored in the year 1990, which is in time for the delivery of the fourth orbiter.

But that, of course, has a lot of factors which we haven't been down yet.

SOLID ROCKET MOTOR PERFORMANCE CAPABILITY

Senator JOHNSTON. Thank you. Do you expect the redesigned solid rocket motor to be able to make up for loss in performance capability due to the *Challenger* accident?

Dr. FLETCHER. Mr. Chairman, that is one of the major purposes of the advanced solid rocket motor—to make up for lost capacity. As I understand Admiral Truly, we will restore the full capacity, which I remember.

Senator JOHNSTON. Do either of you know, if the redesigned solid rocket motor meets all of its objectives, would you still need the advanced solid rocket motor?

Dr. FLETCHER. Oh, I don't think there is any question about that, Mr. Chairman. For the reasons I stated, we really do need the improved reliability and safety of the advanced solid rocket motor. In addition, it has the restored lifting capability which you referred to. So for both reasons, we have to have an advanced solid rocket motor.

ASRM VERSUS SHUTTLE C

Senator JOHNSTON. Would you speak to the need, the relative priority between the advanced solid rocket motor and the advanced Shuttle C? Senator Garn has shown me here an excellent picture of Shuttle C. We have an excellent contract for only two, Martin Marietta. [Laughter.]

Would you speak to the need for ASRM with respect to Shuttle C?

Dr. FLETCHER. Mr. Chairman, that is an awfully good question, and I will answer it on the basis of NASA as a whole. But Admiral Truly may want to amplify that some.

We were faced with that decision going through the fiscal 1989 budget deliberations, and the Shuttle C would be an awfully important thing for this nation if it could be built, and the Shuttle C, those of you that are not aware of it, is simply a modification of the current shuttle, where we take the orbiter off the back of the external tank and we put a cargo carrier in its place.

Now, the cargo carrier doesn't return and land like the orbiter, but it does allow you to lift almost double the amount of weight for a very small cost, development cost, for Shuttle C. After going back and forth on that at some length during the deliberations with OMB, we decided that the advanced solid rocket motor was important to go ahead with and must go ahead this year.

The Shuttle C is still alive. We are making studies on the Shuttle C for an advanced national heavy-lift capability, and that is still on track, but it is in the study phase.

Senator JOHNSTON. For today, the ASRM is a higher priority than the Shuttle C; is that correct?

Dr. FLETCHER. From NASA's point of view, that is correct, Mr. Chairman.

Senator JOHNSTON. Did you want to add to that, Admiral Truly ?

Admiral TRULY. Yes, sir. Last year, I was asked, when we first began building this total recovery program, to put together a total program that would rebuild our national space transportation program from our point of view as robustly as we could.

I, in that process, as the months went on, became extremely bullish, both on the advanced solid rocket motor and the Shuttle C. I think the Shuttle C is an excellent option for the country. It really has a lot of potential advantages, but when asked by Dr. Fletcher to prioritize the two for our fiscal year 1989 budget submission, we deliberated about that, and I did and I still do prioritize the advanced solid rocket motor to be more important at this time.

It buys us the safety and reliability of enhancements in the shuttle system that I mentioned. It has a significant performance increase, whereas in the redesigned solid rocket motor, which you asked about just a moment ago, unfortunately, one of the prices that we have paid in getting that motor to meet our standards has been an increased weight, and we have lost some performance, even from the pre-*Challenger* accident days in the redesigned motor.

So those two things, again—safety and reliability and performance—make me recommend to Dr. Fletcher that we go forward with both, but if he had to make a difficult choice, that we go forward first with the advanced solid rocket motor.

Our Shuttle C studies are in place, and we are going to complete them. We are going to hold that option open for the nation. I think it is a good option, and I want to proceed with it.

But that is how I came to those conclusions.

GOVERNMENT-OWNED VERSUS CONTRACTOR-OWNED

Senator JOHNSTON. I think I still have about a minute left on my 10 minutes, so let me ask one more question, or really, explore one more issue, I should say, and that is the issue of GOCO versus COCO; that is, government-owned versus contractor-owned facility.

First of all, is there really any savings having a contractor-owned facility, or does not the contractor ultimately charge the government for that facility. Second, one of the facilities, one of the GOCO sites is in the Kennedy Space Center at Florida, and would that be a danger to get one that is colocated with the launches.

Would you discuss that issue, Dr. Fletcher?

Dr. FLETCHER. Well, let me, Mr. Chairman, address the savings issue. We will not know whether there is savings until we ask the contractor who wins the bid to review the process. We are going to ask the contractor to bid both ways as a result of those bids, we will be able to cite more accurately whether there is any savings for a company-owned facility.

How, that is not the purpose of the government-owned facility. The government-owned facility is primarily to be sure that we have the high reliable production facility that NASA really wants, and also it gives us the option of changing contractors if the contractor isn't performing, and that is the purpose.

So you have to balance that off against any possible savings of the company owned. There are probably other reasons that have to be dealt with, but that is the main issue here.

Senator JOHNSTON. That being so, which do you prefer?

Dr. FLETCHER. At this point, I think that Admiral Truly and J.R. Thompson and myself have gone around and around on this one. Before we get the bids in, we prefer the government-owned facility. I think that the bids may change that, but at this point, I think that is the issue.

Admiral TRULY. Let me comment on that. The beauty of this competition is that we are going to find out the cost from the contractors. They are required to bid on the same site, both the government-owned and a privately-financed facility.

Our early studies did show the United States, did indicate to us that a GOCO facility would be the cheapest, but we are going to find out, with their data, and of course, our evaluation of that data, and if it turns out that whichever is the most advantageous to the government, I don't think there is a person at this table or in NASA that wouldn't be quite willing to go however that competition goes out.

I would like to also, if I could, take the opportunity to mention that our experience with GOCO facilities, we have quite an experience with GOCO facilities today. The new orbiter in Palmdale, Calif., is being built in a GOCO facility.

The Rockwell Co., their plant in Downey, Calif., is a GOCO facility. The external tanks at Michoud are being built in a goco facility. Our Sliddell computer complex is in a GOCO facility.

So it is not an unusual thing, and we have a competition to get the data and choose, and if it comes out one way or another, I will be extremely happy. It is the motor, it is the advanced solid rocket motor, not the facility; that is our end objective.

Dr. FLETCHER. Mr. Chairman, with respect to your second question, the danger of KSC, preliminary looks by all on the staff is that we can really minimize dangers. There is a large table of distance down there for a plant such as this.

However, I think it is premature. We have a site selection group addressing that problem along with a lot of other problems, and I think we will have to wait for their recommendations and see whether that is a factor or not.

Senator JOHNSTON. OK.

Senator Garn?

SHUTTLE C VERSUS ASRM

Senator GARN. Well, I don't mean to belabor the goco. I think my opening statement, which you fortunately missed, made it clear, and I don't need to repeat that. Let me get back and explore in more depth the issue of Shuttle C.

As I said in my opening statement, I am certainly concerned about the choices that NASA has to make, due to the 302(b) budget allocations, the Senate has imposed upon us.

Those are difficult choices. But when I look at Shuttle C and what it will do, it seems to me it might be a better choice than ASRM at this point.

No. 1, it is my understanding that it can be available a lot sooner; is that correct?

Mr. THOMPSON. I think it is about the same timeframe. With a quick, fast start, I think late in 1993 or 1994. So it is in the same timeframe as the advanced solid rocket booster.

Senator GARN. That was my understanding; it would be available considerably sooner than that. Another advantage, it is not tied to the orbiter flight. Years ago, I felt we needed five orbiters. I did not feel that it was possible for NASA to carry out the flight schedule that I had proposed with four orbiters. I tried very hard to get money appropriated for a fifth. We have four.

With Shuttle C, you are not using orbiters. So you are taking some pressure off of a very small orbiter fleet, plus the fact that a long time before you gentlemen ever came back to NASA, we were arguing with the Air Force the need for a heavy-lift vehicle. Nobody disputes the need for a much heavier lift vehicle.

I felt at that time shuttle-derived made a great deal more sense. What is your response to the pressure on flight schedule of a four orbiter fleet?

And so you have got a more advanced solid rocket motor. I don't disagree with that concept. I am trying to look at the utilization of the whole system, and wouldn't you be better off to be using that unmanned cargo vehicle with a Shuttle C doubling the capacity and not putting the pressure on the four-orbiter fleet?

Dr. FLETCHER. Senator Garn, let me state, because I have gone through that back and forth quite a few times. I don't think there is any question but you are right about both points. We do need five orbiters and we do need a Shuttle C.

We do need that extra lifting capacity for the long haul, but it is not just a question of the extra lifting capacity.

By the way, a fifth orbiter is really not in the cards with this kind of budget situation right now, but some day. Dr. Stever will address that.

The NRC, not his committee, but another committee, recommended that there be five orbiters. We ought to seriously consider that. The reason is, they are concerned about the long-term future of the shuttle program. That is the reason we have the advanced solid rocket motor. The shuttle is going to last 30 years. The possibility of an accident in that 30 years is rather high, as pointed out by the NASA Research Council.

We are trying to reduce the risk of an accident in the outyears by the advanced solid rocket motor. However, if there was an accident, a fifth orbiter would be a desirable thing to have. With regard to the Shuttle C, that is also true. We do need the extra lifting capacity. It would take the load off the shuttle and a lot of other things that the Air Force is dealing with, and it would be a good thing to have.

We have to think of first things first in a tight budget year. I don't see how we can get out of trying to address the reliability of the four orbiters that we now have in the works, and the way to do that at the present time, is to improve the reliability of the four-orbiter fleet.

Senator GARN. My question has to do with purpose, because I want to highlight, once again, what Congress is doing and has been doing for a number of years, and that is, forcing NASA to make difficult choices.

That choice was made several years ago. Now all of my colleagues love to criticize the fact that we didn't have the proper mix of orbiters versus ELV's.

NASA was forced to make similar choices then, several years ago, either to go with more ELV's and less orbiters, less manned flight, and then everybody sits back and says, "Well, you didn't have enough ELV's when *Challenger* exploded.

What I am saying is we are going to look back a few years down the road and somebody is going to be dumping on Jim Fletcher and saying, "Why didn't the damn fool build Shuttle C? He should have done that."

We will be sitting back making you a scapegoat rather than saying, "Well, we didn't give them enough money." I just have to keep making the point, it is a tragedy and a shame what we are doing to future technology in this country, not just space technology, but National Science Foundation, our technological base, which has always been our advantage in this country. That is what we are doing. We are forcing these kinds of choices so that nobody misunderstands what they are saying. They don't disagree with what I am saying about Shuttle C. Simply telling Congress isn't giving them enough money, and so they are having to make a choice between two valuable programs, but there is another advantage that needs to be pointed out. I understand the six shuttle sets or previously built rocket motor sets that we would not use on a manned mission, 10 million pounds of fuel with the AP supply diminished and so on.

There is not only a lot of money involved in the production of those six sets, they could be used on an unmanned vehicle. I wouldn't worry much about them. I don' t know whether Dick agrees with me or not. Maybe I am crazy.

Dr. FLETCHER. I think he does, Mr. Chairman.

Senator GARN. I would fly the same SRB's tomorrow morning as long as it is a warm day, without fixing the O rings or anything else. I don't say that to be brave. It is just a stated fact. Give me a 70-degree day or more, and I will go with the same SRB, so I have no problem with running six sets on an unmanned vehicle.

So what are we going to do, just burn those down and burn up the taxpayers' money and just never use them again?

Dr. FLETCHER. Senator Garn, you are absolutely right. If we had the Shuttle C, we could use up those six flight sets, the solid rocket motors that would not be used on the redesigned solid rocket motor.

However, we do need the development money to build the Shuttle C, and that is a matter, I don't know, of $1.5 billion, or thereabouts. I don't know whether we have exact cost estimates, but it is in the same ball park with the ASRM; it is simply that we can't have both at this point.

Senator GARN. There is another alternative that certainly is not in the ballpark at all, but I would like your opinion of it. Rather than monetary constraints of the liquid booster rocket system, which the Soviets certainly have used and continue to use, evaluate that option and again, I understand there isn't money to even think about it in terms of dollars, but it is simply a substantive response to the liquid.

Dr. FLETCHER. I would like to start first, but then we have had a lot of debates about that.

But we have underway, Senator Garn, a study which is the first attempt, I think, when I was here quite a few years ago, of a liquid rocket booster, and the studies look very promising that the availability of a liquid rocket booster is way beyond the availability of the advanced solid rocket motor.

I don't even have the date when that might be available if you started today. Perhaps Admiral Truly or J.R. Thompson would address that.

Admiral TRULY. You are exactly right. There are a lot of advantages to a liquid rocket booster. We have, for the past year, had a significant study of those possibilities going on through the Marshall Space Flight Center. Those studies are, as Dr. Fletcher said, much more immature than our status and understanding of the advanced solid rocket motor, and they would cause a significant reevaluation of air dynamics because the shapes and sizes would be different.

Nevertheless, we are going to complete those studies, and we feel very strongly about not backing away as we did years ago from the large liquid rocket booster technology. We plan to continue that. But compared to the advanced solid rocket motor, it would be much later and much more expensive, we feel, at this point. But we are not forgetting that in our research.

RISK ASSESSMENT

Senator GARN. Dr. Fletcher, Dr. Stever will testify after you are completed today, and in his statement prepared for the hearing, he says, and I quote:

> Working within scheduling budgetary constraints, the risk associated with the first flight of the RSRM, while acceptable to NASA, will be higher than if the program were not so constrained. Our panel recommended that NASA undertake a continuing program for reducing risk beyond flight testing. Having such a program requires advanced planning. It will also require an adequate budget.
>
> Beyond the single cold weather ground motor test for the program, no further NASA test program is budgeted for after the first shuttle flight.

Admiral TRULY. Let me mention, and then ask Mr. Thompson to comment, that one particular motor is not the extent of our budgeted plans. We intend, and we think it is a good idea throughout the life of the RSRM program, to essentially, at appropriate times, take the motor off the production line, if you will, and take it to a test stand and instrument it and fire it to make sure that we continue the quality and the reliability of that production line.

We call these production verification motors, and we intend to budget for them as the years go on. We also believe strongly that we have built up in the last couple of years a significant capability in our smaller testing, the TPTA test stand at Marshall.

We intend to, as time goes on, and if improvements are recommended and approved in the program, they will need to be tested, and so which, as our budget can afford that, we are going to set aside money to make sure that we, in the program, in this time, when we start flying again, that we do not walk away from a significant ground test program. That goes for the main engine, as well.

SAFETY IN SPACE

Senator GARN. I think my time is up, but let me make one other point and see if you agree. I don't think that anyone could have felt worse than I did about the *Challenger* accident. As you know, Mike Smith was my trainer. You knew all the people personally, as well, having flown twice and having been a space shuttle commander, but in my opinion—and I say that it is absolutely impossible, no matter how much time we take, no matter how many ground tests we have, no matter how much time we spend with O rings—that the shuttle is the most technologically complex machine man has ever built.

You would know this far better than I from your positions as commander of the multiplicity of things that can happen during a space flight. My point is that we cannot guarantee safety in space. We can do everything that we can to minimize that risk, but ultimately, there is some inherently dangerous problems with going.

It is not a normal activity for man to fly in space, and I would hope that people would realize that if we want to guarantee safety in space, then we simply should not fly again.

If anybody thinks, no matter how long we take, trying to redesign tests, that we are going to guarantee that there is not going to be another accident in space, they are kidding themselves. I am amazed that after 2½ years, we kill 20,000 people a year on the highways of this country due to drunk drivers and it is sort of, "Ho-hum. So what? Another 20,000 people lost their lives. That's all right."

At seven, we stop the whole world for 2½ years, and there is some implication that we are going to be able to guarantee safety in space. I am sure you would agree, and I would like people to understand, that simply is not possible.

Admiral TRULY. I would like to respond very briefly, if I could. You are right. This country does not print enough money to make space flights to be perfectly safe. There comes a day when, if we are going to have a space leadership program, you have to go out to the launch pad to count down, balance your risks, assess them, and then go fly. I think every astronaut in the program, and I believe the vast majority of Americans understand that and are willing to take that risk in order to have such an important leadership program for the country.

Two and one-half years is a long time. I personally think that we have struck an excellent balance between the urgent necessity to fly as opposed to trying to fix everything in sight and make the shuttle the most safe. We have fixed things that needed to be fixed, and I am sure that you will hear Dr. Stever comment on some of those things.

But I think we have had a good, well-balanced recovery. We have a test program that stands behind it. We project that we can fly in late August. If we can't make it, we will fly when we are ready. But we have really been doing well the last few weeks, but you are right.

If you want to be perfectly safe, you ought to back away and get out of the business, because you just can't achieve that goal.

Senator GARN. Thank you, Mr. Chairman.

Senator JOHNSTON. Mr. Chairman?

Senator PROXMIRE. Mr. Chairman, thank you. As the technical formal chairman of the subcommittee, I want to thank Senator Johnston for taking over the chairmanship and putting the subcommittee's hands into the hands of somebody who is competent in this area, for a change. [Laughter.]

We have had a very competent ranking member, of course, and I think you have probably admirable stars in these two men to ask the questions. I would like to ask some questions that have been prepared for Senator Stennis, but I think that they are very important, and I have his sympathy for the viewpoint expressed in the Stennis questions.

POSSIBLE SAVINGS UTILIZING ADVANCED SOLID ROCKET MOTOR

Dr. Fletcher, you have previously testified that the advanced solid rocket motor will provide 12,000 pounds of additional payload over that provided by a shuttle using a redesigned solid rocket motor.

As a result, the Congress has been told that if the shuttle is flown 14 times a year, with the advanced solid rocket motor, the payload carried would be the equivalent to 16.4 launches of RSRM shuttle. My question is this: Approximately how many dollars per year, assuming 14 launches per year, will be saved by going with a higher performance ASRM over the RSRM?

Dr. FLETCHER. Senator Proxmire, that is an awfully good question. I don't know whether I can do that in my head, but I will bet that J.R. Thompson has already made that calculation.

Mr. THOMPSON. I think we have got a chart here on the payoff.

Dr. FLETCHER. It comes pretty close to paying for the advanced solid rocket motor, and I think that is your point; in *x* number of years, but I don't know how many number of years *x* is.

Admiral TRULY. We can certainly provide the dollars for the record.

[The information follows:]

The increased payload capability equates to approximately 2.4 additional shuttle missions per year. Based on an average cost of $172 million (fiscal year 1988 dollars) per flight in fiscal year 1994 (the year we resume 14 flights per year), the savings equated to $412.8 million per year.

Admiral TRULY. You are right, the payoff begins with the first flight, and the figures that you showed clearly show that in a few years, the initial investment in advanced solid rocket motor will be returned and then from that point out, *x*.

Senator PROXMIRE. You say a few years. Roughly how many years?

Admiral TRULY. As I recall, it was about 3 to 4 years.

Mr. THOMPSON. Three to four years, I believe.

Senator PROXMIRE. Three to four years. Well, that makes it an excellent investment, it seems to me.

Dr. FLETCHER. Yes, indeed, Senator Proxmire.

UPGRADED FACILITY

Senator PROXMIRE. I believe that Dr. Fletcher, you testified that American industry simply cannot build the advanced solid rocket motor with the facilities of the 1950's and 1960's. Admiral Truly has repeatedly emphasized that the only way to build greater safety and performance into the shuttle solid rocket boosters is to build it by means of modern automated production techniques.

The question is this: Can a reliable, high-performance, and safer rocket motor be built in anything but a modern automated facility driven by automated production techniques?

Dr. FLETCHER. I think, Senator Proxmire, the answer is clearly no. We wouldn't be going ahead with this facility if we didn't believe that to be the case. We have to have a modern upgraded facility to build the new solid rocket motors.

Admiral TRULY. I would be quick to point out, though, that in our situation, the redesigned solid rocket motor is one that we are comfortable with, but it is extremely manpower intensive, and it requires a tremendous amount of quality control, oversight over the processes that would be better controlled with more modern technology.

Senator PROXMIRE. So from the standpoint of safety, from the standpoint of cost, from the standpoint of reliability, it seems that the advanced solid rocket motor is certainly the way to go; is that right?

Dr. FLETCHER. We wouldn't be here and testifying this way if we didn't believe so, Senator Proxmire.

MORTON THIOKOL WITHDRAWAL FROM COMPETITION

Senator PROXMIRE. Dr. Fletcher, as Admiral Truly told us in his opening statement, Morton Thiokol announced on Monday of this week that it would not bid for the contract to build the advanced solid rocket motor. Has that decision in any way changed NASA's schedule for the ASRM program, including contract award in February 1989 with the first flight targeted for 1994?

Also, does the announcement in any way change NASA's schedule to phase out the redesigned solid rocket motor program?

Dr. FLETCHER. Senator Proxmire, I am going to ask in a minute for Admiral Truly to address that, but I would like to address one aspect of that. I don't believe it does change the schedule in any way for the advanced solid rocket motor if they choose not to bid, and as I understand it, it was a business decision on their part.

However, I would like to address some of the rumors that are floating around in the press, where it is believed by some that Morton Thiokol wouldn't be able to win the competition based on political difficulties, bad press, and so forth.

That is absolutely not the case. You followed NASA procurement procedures over the years, Senator Proxmire and the rest of you. Our procedures don't allow political considerations to get in decisions of that sort. So the idea of the fact that politics would enter in with this resource should be abandoned, and I would like to say that for the record right now.

Go ahead.

Admiral TRULY. Senator Proxmire, the answer to both of your questions is "No." Morton Thiokol's withdrawal from the competition does not—still leaves us with a good competition and three good teams of bidders, and we will remain on the same schedule that we had planned to. So we are moving along.

ASRM SAFETY

Senator PROXMIRE. Dr. Fletcher, I understand that the Director of the NASA Marshall Space Flight Center, Mr. Thompson, who is here today and at the witness table, that he testified on March 31 of this year before Congressman Nelson's subcommittee, the House Committee on Science, Space and Transportation, the first advanced solid rocket motor produced in a modern facility would be safer than the 200th redesigned solid rocket motor produced in the current facility.

Is that your view, too?

Dr. FLETCHER. It is certainly my view, but I think that Mr. Thompson ought to be allowed to answer his own statements.

Mr. THOMPSON. I certainly believe that. The context for that testimony was, as I recall it, "Aren't we going to have to get on a new learning curve with the new advanced solid rocket motor?"

I don't believe that is going to be the case with the features that we would build into this new facility, and yes, I would expect the 200th, and I use that number. Just rounding up, I think we have got to fly 1,670 of the current redesigned motors, and they will not be as good as the very first motor that comes off the production line after a qualification and certification program of the advanced solid rocket motor.

I think that the new facility is extremely important in giving us the best possible shot at building, at maximizing the reliability that we have in the advanced solid rocket motor.

Frankly, I am most concerned about the reliability of solid rocket motors, I think, compared to any other component on the shuttle. There is no redundancy, and unlike our space shuttle, a liquid main engine, you have got to shut them off, so they have got to work. I have gone back and reviewed the history of reliability on solid rocket motors.

Most of it's history, of course, I think is much smaller; 1.2 million pounds of less solid rocket motor than we have got today. If you don't throw out any of the data, usually you find a failure independent of that supplier of about 1 in 100.

Of course, as you well know, we fly two on each shuttle, so that means about 1 in 50 flights. At a launch rate of 12 years, that is one every 4 years. We just cannot afford that, so we have got to do something different, and I believe the key to it is building in processed controls and manufacturing in process inspections as you go along, which will give us the best shot at making the most reliable motor that we can make.

I think the path along is a correct one. I certainly allowed and supported Senator Garn's comments relative to the Shuttle C. At the Marshall Center, we are heavily involved in both of those, and I am very much in support of the Shuttle C, but if I look at the job over the next decade and beyond that we have got to do in the shuttle program, whether it is on a Shuttle C or the manned shuttle, those solid rocket motors have got to work.

In order to try to assure that gives us the best shot at it, we need the best equipment in the world to do it. That is why, if I had to prioritize, I come down the way Dick and Dr. Fletcher did, but I go in spades Senator Garn's sentiment on Shuttle C. I think it is just wrong for the country not to plan in that direction.

RSRM SAFETY

Senator PROXMIRE. As I understand it, Dr. Fletcher, to build a safer redesigned solid rocket motor, NASA and the rocket motor producer, I understand, had to sacrifice several thousands pounds of lift capability. How much performance was sacrificed to make the redesigned solid rocket motor safer than the original?

Dr. FLETCHER. We lost a lot of capability. I don't know whether we can assign how much was due to orbiter improvements and how much to solid rocket motor. Do we have that available?

Mr. THOMPSON. I have got the numbers on the solid rocket booster. That is a little bit more on the solid rocket motors. It is near the aft stern, the performance in terms of pounds to orbiter is about 1,500 pounds of payload. About 1,000 of those pounds are associated with the solid rocket motor itself, offloading some of the propellant as well as adding some additional mass.

So the total for the boosters, the two boosters, is 1,500 pounds. Approximately 1,000 pounds were lost in the solid rocket motor itself.

Senator PROXMIRE. Thank you.

Senator Garn?

Senator GARN. Thank you, Mr. Chairman. I am trying not to oppose the ASRM. I think I have outlined that very clearly. It is a matter of having to make choices. I hope you are successful, but I really find it difficult, and I am not an engineer. I don't have the technical background you do, but to make a statement that you think the first one will be safer than the 200th, I find it difficult to make a statement like that, because in terms of upgrading the solid rocket motor, the last experience NASA had that kind of an effort in a filament-wound case not only vastly exceeded cost estimates, it encountered unanticipated technical problems and delays. Furthermore, it has never been flown under current plans. It will never be used.

I am going through all kinds of things I have seen here in the Congress, and I had people come and testify and tell me how wonderful they were going to be; all kinds of aircraft, B-70's you name it, simply were never built.

I want the best and safest rocket motor we can have, but how can you make that kind of prediction in light of general experience with programs of this kind that are highly technical, take a great deal of research and development and testing.

I am not trying to be argumentative with you. It is just to say that before it has ever been designed, before there has ever been any competition that you can tell us, that it is going to be safer than the 200th, because most aircraft that I have dealt with always liked the models that had been fixed a little bit.

The very first one off the production line, I kind of like the number two, three, four or five, as they came along.

B-52H is certainly a lot better. The KC-135's I flew, I sure liked the ones with getting rid of the old alcohol injection engines and so on. That has been a normal progression in space, in aviation—to take a model, and we improve upon it. Again, I am not arguing against the RSRM. It is just quite a statement to make.

Dr. FLETCHER. Yes. I think your point is well taken that they may address that, but I think this is a judgment question. You are quite right. Until we have done it, we can't really say for sure that that is the case. But remember, we will have done an awful lot of this upgrading of the old RSRM. We will have done a lot of technology development about solid rocket motors in general along the way, and we will, of course, have made sufficient tests both in subscale tests and qualification motors before we really are convinced that that is the case.

At this point, you are quite right. It is a judgment question that is considered—judgment by people that are smarter than I, that this will, indeed, be the case. We can' t prove that, however.

Senator GARN. I felt filament-wound case, because of the additional payload that could be delivered and the much lighter case and so on, and that has turned out as I described, and I heard the same sorts of comments.

Mr. THOMPSON. Let me just add to that. I appreciate your point. I do believe it is true, though. I think the process controls that we are going to build in, we have got, for example, some 10,000 square feet of bond line in this current solid rocket motor, whether it is the redesign or the current solid rocket motor. That is a lot of glue.

I think the key to that is the way you build it; the way you lay it up; the way you inspect it as you go. I expect these features will be in that new plant. Typically, solid rocket motors fail because of some weak spot in the bond line. So I think we are addressing the weak points of the way solid rocket motors are fabricated.

You are exactly right. We have got to demonstrate. The first flight set that we fly of the advanced solid rocket motor will be preceded by the subscale test, as Dr. Fletcher mentioned, as well as the qualifications series, so it won't be the very first motor that is built, but by the time we start flying, I believe it is going to be a safer motor.

Otherwise, I wouldn't prioritize between the advanced solid rocket motor and Shuttle C. I, with you, believe very strongly in that Shuttle C program.

Senator GARN. Both of us will be much older, much balder, and neither one of us here when we find out.

Mr. THOMPSON. That is probably true.

Senator GARN. I do like your hairline. [Laughter.]

FOLLOW-ON TESTING PROGRAM

Let me get back to Dr. Stever's testimony in talking about follow-on testing, Dick, and what the $205 million reduction in the House Appropriations Subcommittee does to that follow-on testing program.

Admiral TRULY. I think I would personally judge that to be far broader than the test program.

Senator GARN. Well, it is.

Admiral TRULY. Yes. If the final NASA appropriation included a direction of that magnitude in the overall shuttle program, I think we would have to have a major reassessment through the centers and within the program, and eventually to Dr. Fletcher to understand exactly how to balance that marginal cut, and I view that large of a cut in this program with great alarm.

Dr. FLETCHER. I agree with that, Senator Garn. That was a very large cut, and I think as we approach the problem of turning around the flights at the rate that we say we are going to, we may have to come back for a reprogramming, if that mark holds. It is marginal; it is a cut way beyond where we had anticipated.

Senator **Garn**. Well, you know the difficulties of starting with the budget compared to the President's request, getting away from the discussions of ASRM and Shuttle C and the fifth orbiters and all sorts of other things that we are doing, just relating it back to shuttle operations and the safety of shuttle operations and talking about an additional $205 million cut there.

It is my understanding that the Democratic caucus met yesterday and talked about reducing the Senate 302(b) allocations to as much as another one-half a percent. So the problem is not getting better; it is getting worse. So my question is more general, Dick, not just with the testing, but what these kinds of additional reductions do to the shuttle program, the flight schedule in the future.

I mean, all my colleagues want to get back into space. Everybody is for space, and they are certainly for safety. But while the rhetoric is correct, it seems to me that we are starting to do things now. Forget new programs and new initiatives in space. We are now impinging not only on the shuttle operations, as we have seen in the past, but on safety, as well.

Dr. **Fletcher**. Senator Garn, you are liable to get me started on this whole thing, and, as you know, you are much more eloquent on the subject than I am, but I really think it is unconscionable to make the cuts that people are talking about.

I can' t believe that they will do that. If they make some of the cuts that they are talking about, it could be the end of the national space program, the civil space program, as we know it.

The idea of eliminating the space station is incomprehensible to me; I don't understand it. The idea of cutting it back so it passes on to the next administration, all these things, it is just unbelievable.

On the other hand, the nation apparently does have a budget problem. But somehow, we have got to get our priorities straightened, and I think we have got to have a budget, a reasonable budget that can keep the space program viable, and to keep it viable, we do need a reliable shuttle program. We do need to be able to fly off the backlog as we plan to in the years ahead. We do need a reliable shuttle, and we do need some major program out in the 1990's. A lot of NASA's science programs, commercial programs, do depend on the funding of that space station.

So all of these things are critical at this point, and I just can't imagine cuts that large, but it does happen, and if the nation decides that is what they want, we will have to figure out some way to restructure NASA to abide by them.

BUDGET PROBLEMS

Senator **Garn**. I don't think that is what the nation wants; that is what Congress wants so that they can vote for spending that buys them their reelection next November. That is what the game is all about. I can say that; you can't.

But it is extremely disturbing to me. We do have serious deficit problems. There is no doubt about that. I cannot underestimate that situation, but on the other hand, I want to repeat that NASA's total budget request is only a little over 1 percent of the total budget, and I won't say what I have said in these hearings before. We have only talked about space today.

There happens to be a great deal of aeronautical research and development that goes on and a lot of commercial airlines and airplanes that all of us are flying on every day that burn 35 or 40 percent less fuel. Just in the aeronautical area alone, NASA's research and development has saved billions of dollars to the traveling public and not just in the United States, in commercial aviation in general.

Airplanes are safer. When I talk about a little over 1 percent of the budget for NASA, that includes all of the aeronautical research and development, crash safety tests, supercritical wings, high bypass engine. The list goes on and on and on. What we are shortchanging is the premier research and development agency in this country at about 1 percent of the total national budget, far less than we spend on food stamps in this country.

I am not here to argue against food stamps, but I don't think food stamps do much for the future technological base of this country. There is $1 billion at least of admitted error in the food stamp program alone, just eliminating the error; forget changing qualifications for who is entitled to get them. Just eliminating the error would fund everything we are talking about in the President's budget.

I am sure Chairman Proxmire gets very tired of listening to me. He will only have to until January of next year, but somebody else will have to listen to me, Mr. Chairman, after you are gone. Because there is nothing that I have left in my Senate career that is more important than being able to sit back when I am an old man in a rocking chair looking back at having had some small part in the viable space program for this country.

So the Senate better be put on notice that listen, Jake Garn is going to be an absolute bore. Over and over and over again, we are going to hear it on the floor, and unless this committee gives a better budget allocation to the future of this country, then there will be some delays in appropriations bills on the floor. I haven't filibustered a bill since 1975, so I cannot be accused as one who is always out there blabbering on the floor day after day and delaying bills.

It has been 13 years since I filibustered a bill. But unless the future of this country is treated adequately, the Senate ought to be on notice: Not only is Jake Garn going to be a bore, not only are we going to get tired of listening to me, they will listen at great length on the floor of the Senate about the values of space and research and development and sciences and math education, National Science Foundation, things like supercollider and superconductor, those sorts of things that are going to guarantee the future of this country and our technological base.

You only have to listen for a few more months, Mr. Chairman, but I invite you back. The Jake Garn story will be going on a long time after you are gone.

Senator PROXMIRE. Senator Garn, that reminds me of Bob Hope's theme song. "Thanks for the memory." He says, "You always were a headache, but you never were a bore." [Laughter.]

So I expect to have a headache, but I expect to give a headache, too, at the same time. At any rate, Senator Garn, I am going to have to leave this hearing and leave it in your hands. It will be in the best hands it could be in in the Senate. There is nobody who has more thorough knowledge of all of the technical aspects of this problem than Senator Garn does, and I don't mind having a headache as long as you don't bore me, and you certainly don't bore me under any circumstances.

Senator Stennis has asked that a letter he received from Senator Warner be printed in the hearing record. Without objection, the letter will be included in the record.

[The letter follows:]

LETTER FROM SENATOR JOHN WARNER OF VIRGINA

June 7, 1988

The Honorable John C. Stennis
Chairman, Committee on Appropriations
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

I have been informed that the HUD-Independent Agencies Subcommittee will conduct a hearing tomorrow June 8, 1988, on the need for NASA's Advanced Solid Rocket Motor. I would appreciate it if you would share my views with members of this important subcommittee at that hearing, and submit this letter for that panel's official transcript.

We all know, and I think we all agree, that NASA's Space Shuttle is our Nation's only means for manned space flight for the foreseeable future. I think we also all agree that one of the most critical elements of the Shuttle is its solid rocket booster motors. We also know that NASA has repeatedly testified before the Congress during the last 12 months that it must have a more reliable, more capable safer booster called the Advanced Solid Rocket Motor (ASRM).

I agree that our Nation's manned space program needs the ASRM. I believe that need can be summed-up by highlighting the following four criteria: safety, performance, reliability, and competition.

First, let me address the requirement of safety. We remember all too well the Shuttle disaster of January, 1986. In fact, I do not know anyone who can forget it. That disaster has dominated our personal emotions, our private thoughts toward our Nation's space program. That disaster has also dominated a large portion of NASA's talent, budget, and manpower. I applaud everyone at the Agency who has devoted himself or herself to the task of regaining our superiority in the manned space flight arena.

A safer booster has been the major objective of NASA's energies over the last 30 months. I fully agree with this priority thrust on the part of the Agency. Openly and directly, NASA has gone out to all of America's solid rocket industry for the best solutions to meet the critical criterion of greater safety. I hope and believe that NASA will choose the best ideas from America's industry to produce the safest possible Advanced Solid Rocket Motor.

Positive strides have been made to develop a safer, interim booster by redesigning the old Solid Rocket Motor. I do not know anyone who is arguing that the Redesigned Solid Rocket Motor (RSRM) is less safe than the original version. But the fact remains that the only way to accomplish maximum safety enhancements is through new design concepts and new manufacturing capabilities. As the Director of NASA's Marshall Space Flight Center, J.R. Thompson, testified in late March before a subcommittee of the House of Representatives: "Let me just add to that relative to the safety [issue], I believe that the first motor that we build with the Advanced Solid Rocket Motor [facility] will be safer than the two hundredth motor with our current Redesigned Solid Rocket Motor [built] in its facilities." In other words, because of the current and better manufacturing capabilities now available to the American solid rocket motor industry, the first ASRM will be safer than the two hundredth Redesigned Solid Rocket Motor to be flight tested soon.

At that House hearing on March 31, 1988, J.R. Thompson and Admiral Richard Truly, NASA's Associate Administrator for the Office of Space Flight, testified to three other specific points regarding the enhanced safety of the ASRM over the RSRM. First, with the ASRM, there would be a 50 percent reduction in what NASA defines as "Failure Causes" in comparison with the RSRM. Second, with the ASRM there would be a 25 percent reduction in what NASA defines as "Criticality 1 Failure Modes" in comparison with the RSRM. Third, with the ASRM, there would be a 55 percent reduction in NASA's category called "Criticality IR Failure Modes" in comparison with the RSRM.

Secondly, I want to share with Members of your Appropriations Committee a few words about another NASA requirement. This is the Agency's need for enhanced performance of its solid rocket booster motors. In the area of performance, NASA has lost several thousands of pounds of payload lift capability in its attempt to increase the safety of the old solid rocket motor. I do not object to that. If the only way to make the old motor safer was to redesign it with less capability, then that is an adequate interim step.

The problem is, Mr. Chairman, that in American legislative solutions to problems, so-called temporary interim fixes have sometimes become permanent solutions. We sometimes spend so much money patching up a problem that we have little energy or means to advance the state of the art and get the kind of performance really required. So, if we remain satisfied with the Redesigned Solid Rocket Motor, we cannot claim that our Nation's space program is again moving forward. We cannot claim that our program is even marching in place. If we are forced to stick with the RSRM, America would be sliding backward. We would be regressing on the performance of the only manned launch capability of the United States.

What does the ASRM give us in payload enhancements? The Advanced Solid Rocket Motor not only recovers the capability lost by the redesigned version, but gives us an extra 12 thousand pounds of lift capability per flight. What that means is that on the basis of 14 Shuttle launches per year using the Redesigned Solid Rocket Motor, with the Advanced Solid Rocket Motor we would be getting the payload equivalent of 16.4 Shuttle launches. Getting a bonus of 2.4 launches is a tremendous boost in cost effectiveness, not to mention a bonus in yearly economic savings. As NASA has repeatedly testified before both branches of the Congress, the enhanced capabilities of the ASRM make it the key to economically meet the outer space requirements of the foreseeable future.

Third, I want to address the issue of reliability. NASA has told us that the only way to reliably build a safer booster, and one with higher performance, is in a new plant. NASA officials have stressed that this new facility must be highly automated, and driven by modern process control technologies. I fully agree with NASA and its leading officers who have testified that American industry simply cannot build the solid rocket motor of the future with the facilities of the 1950's and 1960's. Admiral Truly has repeatedly emphasized that the only way to build greater safety and performance into the Shuttle's solid rocket booster, is to build its components with the means of modern, automated production techniques. Everyone I have talked with who has had responsibility for assuring the reliability of high technology products has told me that Admiral Truly is right. You need a modern plant to produce a modern rocket motor for NASA. The old plants of the old days should soon pass into the history of our space program.

Finally, let me conclude with just a few words on contractor competition. At the present time, NASA has told us that it cannot economically recompete its current producer for the Redesigned Solid Rocket Motor. This is because no other corporation or team of contractors have the facilities to make these motors. Only by the establishment of a new, modern facility can NASA guarantee a true and open competition to select a contractor or a team of them to produce the truly advanced ASRM. NASA needs the administrative option of competing the Shuttle program. Only by means of competition can NASA assure maximum reliability and cost effective performance by the contractors selected to produce the Advanced Solid Rocket Motor. Therefore, I applaud NASA's drive to bring competition into the Advanced Solid Rocket Motor. I also applaud NASA's ASRM acquisition strategy to secure the best possible solid rocket booster for our Space Shuttle.

In conclusion, let me stress that our Nation should not settle for the interim fix, Mr. Chairman. The redesigned motor is not good enough for the future of our space program. We can do better, and with the Advanced Solid Rocket Motor we shall do better. We will get our leadership back with a safer rocket, with a more reliable rocket, with a higher performance rocket. We will accomplish all that with the time proven, self monitoring phenomonon called continuing contractor competition.

With kind regards, I am

Sincerely,

John Warner

John Warner

JW:jcb

cc: Honorable William Proxmire, Chairman
HUD-Independent Agencies Subcommittee
Senate Committee on Appropriations

Honorable Jake Garn, Ranking Minority Member
HUD-Independent Agencies Subcommittee
Senate Committee on Appropriations

Senator PROXMIRE. And thanks for the memory. You are now chairing the committee.

Senator GARN [presiding]. Chairman Proxmire has not only had to put up with me on this committee, but we also served for 14 years together on the Senate Banking Committee, and we played musical chairmanships on both committees for 12 of those 14 years.

Gentlemen, I don't have any additional questions for you at this time, unless you have additional comments you wish to make.

Dr. FLETCHER. You probably want to hear from Dr. Stever at this time.

Senator GARN. Dr. Stever, please proceed.

NATIONAL ACADEMY OF SCIENCES

NATIONAL RESEARCH COUNCIL

STATEMENT OF DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER, NATIONAL RESEARCH COUNCIL, NATIONAL ACADEMY OF SCIENCES

ACCOMPANIED BY MYRON F. UMAN, DIRECTOR OF SPECIAL PROJECTS, NATIONAL RESEARCH COUNCIL, NATIONAL ACADEMY OF SCIENCES

OPENING REMARKS

Dr. STEVER. Senator Garn, I am pleased to appear here today in my capacity as Chairman of the NRC panel that is conducting evaluation which was recommended by——

Senator GARN. Dr. Stever, I can hear you, but I don't know if they can in the back. If you will pull the mike over directly in front of you?

Dr. STEVER. I am pleased to be here in my capacity as Chairman of the NRC panel which was recommended by the Presidential Commission under William Rogers' chairmanship to provide the Administrator of NASA with an ongoing independent technical evaluation of the design and the certification of the shuttle solid rocket booster.

Dr. Uman, the NRC Project Director, is here with me today, too. I am a little sorry that I have to say that while we are frequently called an oversight panel, we do not exercise program responsibilities and make recommendations regarding organizational, budgetary or operational decisions. I am sorry, because in the previous incarnation, I used to defend the National Science Foundation organization budget and operational decisions in front of Mr. Proxmire's subcommittee, and I always enjoyed those exchanges, and the exchange that you have had here recently has brought back memories for me.

SIX INTERIM REPORTS

We have issued six interim reports. Each of our reports is peer reviewed by other members of our academies, and it is before we issue, and they are made available to the public without restriction. My testimony today focuses on the panel's findings that recommendations thus far on the status of the redesign program, what remains to be done after the resumption of flight, and the development of the next generation of solid rocket motors.

Our work is not complete, however, for we will continue until after the first launch of the redesigned solid rocket motor, and we will present a review of our findings then. The status of the redesign programs, the RSRM, incorporates several new features in the case field joint that promise substantial improvement over the original design.

Thus far, the performance of that joint in tests have been very encouraging, but we must remember there are several very important tests yet to go, including the ultimate test of flight.

REDESIGN EFFORT

The redesign effort has also included work on a number of parts of the booster that were not implicated in the accident, including the case-to-nozzle joint, the internal nozzle joint, the nozzle to ablative parts, the structure that forms the rearward attachment between the booster and the external bank and the aft skirt which supports the motor on the launch platform.

The principles of the redesigned case steel joint has also been applied to the case-to-nozzle joint. The performance of this joint in tests has also been encouraging, but our confidence in it is less certain than our confidence in the case field joint.

Parts of the nozzle have been redesigned to improve their ability to protect other vital parts that will being destroyed by the hot combustion gases. The new designs were based on the results, and this is important, the results of a NASA model development program that was being conducted in parallel with shuttle operations before the accident.

FLAW TESTS

The testing program itself is considerably more thorough than that one that preceded the first shuttle flight. An important element of the program never before done has been a series of tests with flaws built into the design. Flaw tests have been of two types. One type of flaw simulates the kind of defects that could conceivably occur in manufacturing or assembly but could not otherwise be detected, such as by leak checking the seals, and the other type of flaws are to breach the barriers that are intended to prevent hot gases from reaching the O ring seals.

This latter type of flaw is induced to test the performance of the O ring. The last scheduled test before launch, the so-called production verification motor, contains this type of flaw in two joints and is essential for certifying the design.

Unfortunately, there can never be enough tests. As you know, an SRM cannot be tested before flight as a jet engine or indeed the SSME's can. This was a point that was made by J.R. Thompson. Liquid fuel engines can be run over and over again and develop a statistical significant base of data that describes the performance and reliability.

This is not the case with solid fuel motors, since the motors consume when it is fired. The costs of repeated tests in both time and money are high, so the program has too few test to develop a statistically significant data base. Every part has been tested at least once, and most of them more than once before the resumption of flight, but some elements will only have been tested once before full duration firing.

IMPORTANCE OF DESIGN

This brings me to a central theme through each of our reports, and that is to the design itself, the most important determinant of success, not only for the return to flight, but throughout the flight program will be the assurance of quality in materials, manufacturing, and assembly of motor components.

Defining and maintaining the essential controls on materials and processes is critical to the reliability of the booster, especially because the flight article cannot be tested before use.

We have made a number of recommendations in this regard. To have confidence in the next flight and the flights after that, each RSRM must be as much like that, like each of those that have been tested or flown before as is possible. This task is a formidable one, but it is also essential for the safety and reliability of future shuttle flights.

After the return to flight, we will welcome the return to flight, but we must remember there is more work to be done. First, no amount of testing can adequately simulate conditions of flight, so the first several flights should be regarded as new parts of a significant certification program. It has proven to be prepared to take corrective action based on flight data. The flight environment, after all, is what counts.

Second, not all of the changes that the engineering team would like to make will be made before the return to flight. At NASA, the program has to be focused on changes essential for adequate reliability of the next flight.

Beyond these mandatory changes, however, additional changes may also be needed to enhance safety or improve reliability, performance and cost effectiveness. Work on some aspects of the design, redesign, is in fact, currently unresolved, and in addition, other design or test issues have been deferred until after the return of flight.

The objective of the redesign effort has been to return to a safer and more reliable shuttle to service at the earliest possible day. Safety and reliability, however, are not absolute. Senator Garn, I could leave this testimony out, but I never say anything on this subject without including this.

RISK FACTOR

NASA has made judgments about what additional improvements or delays in the current service may imply. Flying the shuttle will always entail accepted risk.

Thus far, however, we have found no evidence the redesign team has taken or will be taking undue risks in favor of maintaining its schedule. However, in another large aerospace program working within the schedule and budgetary constraints, the risks associated with the first flight of the RSRM, while acceptable to NASA, will be higher than if the program were not so constrained.

Our panel has recommended that NASA undertake the continuing program for reducing risks beyond flight testing. Having such a program places a requirement on NASA. It requires advanced planning to have the appropriate continuity Whether the integrity of the design can be maintained for the required 20 uses is unknown; this uncertainly has the potential to be capable of introducing improvements into an ongoing operational program.

There is also a requirement elsewhere. It also requires an adequate budget, as you pointed out.

NEXT GENERATION

Our panel has not formally been concerned with matters beyond the return of flight or the redesigned solid rocket booster. However, in our consideration of redesign options, we could not help but be impressed with a number of excellent design approaches that were discussed but not pursued going to the constraints under which the design was conducted.

These alternative design approaches and other innovations offer opportunities for advancing technology and developing more reliable, safer, and more efficient solid rocket motors. In our third report, made last January 15, 1987, we concluded that:

> In the long term, completely new designs, possibly radically different from current ones, may be preferred. The nation' s manned space flight program cannot afford to continue to rely on older technology indefinitely into the future. Consequently, we believe that NASA should vigorously pursue a program to develop the next and future generations of motors for use in the space transportation system.

Mr. Chairman, that quotation concludes my testimony.

[The statement follows:]

STATEMENT OF DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

The Presidential Commission that investigated the Challenger accident, chaired by William Rogers, recommended that the National Research Council provide the Administrator of NASA with an ongoing independent technical evaluation of the redesign and certification of the Shuttle's solid fuel boosters. I am pleased to appear before you today in my capacity as chairman of the NRC Panel that is conducting this evaluation.

The National Research Council is the part of the National Academy of Sciences and National Academy of Engineering that is organized to advise government on matters of science and technology. The NRC selected the membership of our Panel (Attachment A) based on an assessment of the technical issues involved and the demonstrated expertise of the members in those areas of science and technology. Our task (Attachment B) follows from the recommendation of the Rogers Commission. While we are frequently called an "oversight" panel, we do not exercise program responsibilities or make recommendations regarding organizational, budgetary, or operational decisions.

We carry out our task by developing findings, conclusions, and recommendations regarding technical aspects of the new designs as well as the program to test, verify, and certify them for manned flight. Thus far, we have issued six interim reports (Attachments C through H, respectively). Each of our reports is peer reviewed prior to being issued and is made available to the public without restriction.

The Panel obtains the necessary details of the new designs and test program from frequent technical discussions with members of the redesign team, comprising engineers and others from NASA and its contractors, and with other knowledgable people in the appropriate technical communities. In the 24 months since our project began, we have had approximately 85 such meetings. I am pleased to acknowledge in this regard the helpful cooperation of everyone at NASA, Morton-Thiokol, Inc., and the U.S. Air Force, and the other organizations whom we have asked for help.

My testimony today focuses on the Panel's findings and recommendations thus far on the status of the redesign program, what remains to be done after the resumption of flight, and the development of the next generation of solid rocket motors. Our work is not complete, however, so what we have said thus far should not be considered to be our last statements on the matter. Our work will not be complete until we have reviewed the data obtained from the first launch of the Redesigned Solid Rocket Motor (RSRM).

Status of the Redesign Program

The RSRM incorporates several new features into the case field joint that promise substantial improvement over the original design. For example, the so-called capture feature significantly constrains the relative motion between sealing surfaces, reducing demands placed on the O-rings. The ability of the O-rings themselves to maintain a seal has been improved by heating them to assure resilience and by enlarging the O-ring grooves to allow pressurized gas to assist the sealing process. And several additional barriers to gas flow have been added to protect the

O-rings from the heat contained in the combustion gases. Thus far, the performance of the joint in tests has been quite encouraging, but we must remember that there are several very important tests yet to go, including the ultimate test of flight.

The redesign effort has also included work on a number of parts of the booster that were not implicated in the accident, including the case-to-nozzle joint, internal nozzle joints, nozzle ablative parts, the structure that forms the rearward attachment between the booster and the external tank, and the aft skirt, which supports the motor on the launch platform.

The principles of the redesign of the case field joint have also been applied to the case-to-nozzle joint. The application of the principles is different, however, because of the way in which the latter joint must be mated. The relative motion is restricted, in this case by the addition of 100 additional (radial) bolts; the O-rings are heated to maintain resilience; the O-ring grooves are improved; and gas barriers have been added upstream of the seals. The performance of this joint in tests has also been encouraging thus far, but our confidence in it is less certain than our confidence in the case field joint. The uncertainties arise because one of the gas barriers, a relatively thick application of a polysulfide adhesive, has shown a tendency to form voids and blowholes. The potential consequences of these defects on safety and reliability are being studied in a series of tests with similar flaws deliberately introduced. Thus far, it appears as if other features of the new design help to minimize the effects of jets of hot gas that might pass through the blowholes, but, as I indicated earlier, tests are continuing.

Parts of the nozzle have been redesigned to improve their ability to protect other vital parts from being destroyed by the hot combustion gases. The new designs were based on the results of a NASA nozzle development program that was being conducted in parallel with Shuttle operations before the accident. The objective of that program was to understand the performance of ablative parts made from composite materials (for example, carbon cloth phenolics) so that improved parts could be designed, enhancing flight safety. Here too, the results have been encouraging thus far, with one exception. One part, called the outer boot ring, failed in its first full-scale, full-duration test. Fortunately, an alternative design had been developed in parallel and was available for incorporation in the program with minimum delay. The alternative design appears to have performed well in its first qualification test, so there may yet be a happy ending to the story on nozzle ablatives. However, there is still work to be done because the original redesign choice for this part was made on the basis of a theoretical analysis and subsequent analyses still suggest that the original redesign is superior, despite its failure in a test. These materials are exceedingly complex and the Panel is not surprised that the analyses are deficient. The proof of the redesign is in the testing, but the experience demonstrates the need for improved understanding.

Another area where theoretical analysis has not proven to be a reliable guide to design is the aft skirt. This part has failed to demonstrate the required structural factor of safety in two tests. The specified factor of safety is 1.4 times the maximum anticipated load; in the latest test, the skirt reached about 1.32 times maximum anticipated load when a weld failed. Whether this deficiency represents an acceptable risk remains to be determined.

The testing program itself is considerably more thorough than the one that preceded the first Shuttle flight. An important element of the program, never before done, has been a series of tests with flaws built into the design. The flaw tests have been of two types: One type of flaw simulates the kinds of defects that could conceivably occur in manufacturing or assembly but that could not otherwise be detected, such as by leak checking the seals. The other type of flaw is intended to breach the barriers that are intended to prevent hot gases from reaching the O-ring seals. The latter type of flaw is induced as a means to test the performance of the O-rings. The last scheduled test before launch, the so-called Production Verification Motor (PVM), contains this type of flaw in two joints and is essential for certifying the design.

Unfortunately, there can never be enough tests. As you know, a SRM cannot be tested before flight, as a jet engine--or indeed the SSMEs--can. Liquid-fueled engines can be run over and over to develop a statistically significant base of data that describe their performance and reliability. This is not the case with solid-fuel motors since the motor is consumed when it is fired. The costs of repeated tests, in both time and money, are high, so the program has too few tests to develop a statistically significant database. Every part will have been tested at least once, and most more than once, before the resumption of flight, but some configurations will only have been tested once.

Which brings me to a central theme running through each of our reports: Next to the design itself, the most important determinant of success, not only for the return to flight but throughout the flight program, will be the assurance of quality in materials, manufacturing, and assembly of motor components. Defining and maintaining the essential controls on materials and processes is critical to the reliability of the booster, especially because the flight article itself cannot be test fired before use. We have made a number of recommendations in this regard, particularly regarding specifications for O-rings and adhesives and control of environmental cleanliness. To have confidence in the next flight and the flights after that, each RSRM must be as much like each of those that has been tested or flown before as is possible. This task is a formidable one, but it is also essential for the safety and reliability of future Shuttle flights.

After the Return to Flight

While we shall all welcome the return to flight, we must remember that there remains more work to be done. First, no amount of ground testing can accurately simulate the conditions of flight, so the first several flights should be regarded as integral parts of the certification program. It is prudent to be prepared to take corrective action based on flight data. The flight environment, after all, is what counts.

Second, not all of the changes that the engineering team would like to make will be made before the return to flight. By directive from NASA, the program has focussed on only those changes identified as essential for adequate safety or reliability for the next flight. Beyond these mandatory changes, however, additional changes may also be needed to enhance safety or improve reliability, performance, and cost effectiveness. Work on some aspects of the redesign is in fact currently unresolved and in addition other design or test issues have been deferred until after the return to flight.

The objective of the redesign effort has been to return a safer and more reliable Shuttle to service at the earliest possible date. Safety and reliability, however, are not absolutes. NASA has made judgments about whether additional improvements are worth the delays in return to service that they imply. Flying the Shuttle will always entail accepting risk.

Thus far, we have found no evidence that the redesign team has taken or will be taking undue risks in favor of maintaining its schedule. However, as in other large aerospace programs working within schedule and budgetary constraints, the risks associated with the first flight of the RSRM, while acceptable to NASA, will be higher than if the program were not so constrained. Our Panel has recommended that NASA undertake a continuing program for reducing risks beyond flight testing. Having such a program requires advanced planning to have the appropriate continuity with the technical efforts of the redesign program and to be capable of introducing improvements into an ongoing operational program. It will also require an adequate budget.

The risk reduction program should account for both the concerns that might arise during flight and the important issues that have been deferred or unresolved. We do not know, of course, what concerns might arise from actual flight experience, but there are a number of important design and testing issues that remain.

For example, among the questions that have been deferred are the need to prevent the buildup of differential pressure inside the nozzle and the reusability of the new hardware. In the the former case, we now know from testing that a pressure difference can arise across the nozzle boot late in motor operation; the pressure differential results in unanticipated stresses in the nozzle and if it should occur much earlier, it could affect flight safety. In the latter instance, the new capture feature design requires tight dimensional tolerance in the hardware, literally a few thousandths of an inch on a 12 foot diameter. Whether the integrity of the design can be maintained for the required 20 uses is unknown; this uncertainty has potentially important consequences for the operational program.

Among the issues not resolved to date are: the adequacy of bonds between the case and insulating liner; the ability to measure cases with accuracy and precision to assure an interference fit in the capture feature; the structural performance of bonds internal to the nozzle; the occurrence and effects of blowholes in the polysulfide adhesive used in the case-to-nozzle joint; and the adequacy of pressure seals in the igniter.

Each of these issues has implications for the safety and reliability of the RSRM in flight that I could detail for you if you wish. Our point, however, should be clear: NASA should have the capability of continuing development and testing to reduce risks after flights resume. That capability would include staff, funding, test facilities, and opportunities to introduce risk-reducing improvements into flight hardware and operations on a timely basis.

The Next Generation

Our Panel has not formally been concerned with matters beyond the return to flight of the redesigned solid rocket booster. However, in our considerations of redesign options, we could not help but be impressed with a number of excellent design approaches that were discussed but not pursued owing to the constraints under which the redesign was conducted. These alternative design approaches and other innovations offer opportunities for advancing technology and developing more reliable, safer, and more efficient solid rocket motors.

In our third report, dated January 15, 1987, we concluded that while the current redesign approach was appropriate given its immediate objectives, "In the long term completely new designs, possible radically different from the current one, may be preferred. The nation's manned space flight program cannot afford to continue to rely on older technology indefinitely into the future. Consequently, we believe that NASA should vigorously pursue a program to develop the next and future generations of motors for use in the space transportation system."

Mr. Chairman, that quotation concludes my testimony. I will be happy to try to answer your questions.

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Attachment B

Code Designator for Group Described: ______________

Commission on Engineering and Technical Systems
MAJOR UNIT

Committee on NASA Scientific & Technological Program Review
COMMITTEE

Panel on Technical Evaluation of NASA's Proposed Redesign of Space Shuttle Solid Rocket Booste
SUB-UNIT

Staff Officer: Myron F. Uman, Director

STATEMENT OF TASK

(Make clear what is expected of the group described and by whom the project is sponsored. Limit to not more than this page.)

The Panel will provide technical assistance to the National Aeronautics and Space Administration by reviewing and evaluating the work of the NASA/industry team that is redesigning the solid rocket booster used in the space transportation system. To fulfill this responsibility, the panel will meet as needed with NASA and industry personnel or other members of the scientific and engineering community. In addition, the Panel will participate in NASA's scheduled formal reviews, including but not limited to the following:

Preliminary Design Review
Test Plan Review
Certification Test Requirements Review
Critical Design Review
Design Certification Review/Full Scale Test Results
Flight Readiness Review
Flight Performance Review and Inspection

In connection with the flight readiness and performance reviews, which include all systems that comprise the space transportation system, the Panel will focus its attention on the solid rocket booster. Also in this connection, the Panel will not exercise oversight responsibilities or make recommendations regarding any operational decision.

Following each formal review, the Panel will provide its evaluation to the Administrator of NASA in the form of a short letter report and oral briefing. The Panel will also prepare a final report that may contain a description of the overall process of designing and implementing an improved booster; updates of activities of the NASA/industry team subsequent to the preparation of the specific evaluations; and a summary and update of the findings, conclusions, and recommendations of the committee as appropriate.

The project responds to a recommendation of the Presidential Commission on the Space Shuttle Challenger Accident and is funded by the National Aeronautics and Space Administration.

June 9, 1986
(date of statement)

____
(date of previous statement)
(if applicable)

COMMITTEE RECORDS FORM #1

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

August 1, 1986

The Honorable James C. Fletcher
Administrator
National Aeronautics & Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, DC 20546

Dear Jim:

Based on an initial appraisal of the objectives and focus of the program to redesign the SRB, I am pleased to provide this interim report containing observations, conclusions, and recommendations of the NRC Panel for the Technical Evaluation of the Redesign of the Space Shuttle Solid Rocket Booster.

Background

Beginning with its formation in early June 1986, the Panel has had introductory briefings by personnel of NASA Headquarters, Marshall Space Flight Center (MSFC), and Morton Thiokol, Inc., on the current design and manufacture of the solid rocket motor (SRM), the mission 51-L accident, and preliminary plans for the redesign. We have had more detailed briefings from and discussions with personnel of Rockwell International, Thiokol, and NASA/MSFC on the structural loads and dynamics of the total assembled shuttle and the resultant loads on the SRM, as well as briefings from personnel of United Technologies Chemical Systems Division, Aerojet Strategic Propulsion Company, and Hercules Aerospace Company on alternative solid rocket designs and alternative joint and seal designs. We have toured the Thiokol manufacturing and test facilities and engaged in many detailed technical discussions with Thiokol personnel on design and testing of proposed future SRB designs. We have also been informed by Air Force personnel about the results of their investigation of the recent accident involving the Titan solid rocket motor.

Focus of the SRB Redesign Program

In addressing its charge to provide a technical evaluation of the redesign effort, the Panel is aware of four interdependent factors that influence the program. They are safety, time, costs, and performance. Above all, safety is the prime consideration. The critical national need for the launch capability of the Shuttle makes time a close second. Consequently, we recognize that NASA is initially concentrating on those redesign approaches that will provide the required margins of safety with maximum use of existing facilities, hardware, and components. In addition to engineering design, the Panel is also reviewing the program for testing and verification of safe performance of new designs, selection and specification of materials, and quality assurance or control.

In parallel with this initial approach, the Panel intends to address alternative designs for the SRM to raise the level of not only safety and economy, but also performance.

Design Specifications and Requirements

We understand that the specifications and requirements for redesign of the SRM are being completely reexamined. We have noted differences between

NASA/MSFC and Thiokol personnel on this subject, particularly on the application of past specifications and requirements for the redesign. Great care and prompt action should be taken to eliminate these differences and misunderstandings. We conclude that the redesign process cannot proceed successfully unless and until all parties agree to and understand the meaning of specifications and requirements placed on the performance of the new SRB.

Joints between Motor Segments

While the Panel agrees with the Presidential Commission that faulty design of the pressure seal, compounded by the cold temperature at launch and dynamic joint rotation, is the most probable cause of a blow-by of the two O-ring seals in the aft field joint of one SRB, the ensuing events which resulted ultimately in the loss of the shuttle (almost 60 seconds later) are much less clear. It has been hypothesized that sealing was reestablished by a plug of material which was dislodged later, possibly during conditions of high dynamic pressure including wind shear, leading to melting of the case metal in and adjacent to the joint by hot gas. The details, however, remain uncertain and this uncertainty is very important for the redesign.

All failure modes must be examined, and all potential weaknesses in the design of the motor should be eliminated or reduced to the extent possible. For example, the probability of debonding of insulation from the metal case should be minimized as should the probability of the introduction of moisture into the case where corrosion of metal parts or degradation of performance of the elastomeric parts can occur. We recommend that NASA consider using existing SRM cases to perform tests on the joint to investigate the mode of failure of mission 51-L to assure that our understanding of the weaknesses in the original design is correct. The tests should be designed to investigate alternative modes of failure and to duplicate the failure of the 51-L joint.

Based on its work to date, the Panel recommends that each of the following be addressed in the new design: joint rotation from all sources; O-ring materials; O-ring and groove design; verification of O-ring seating; insulation at the joint, considering the potential for gas flow in the gaps; asymmetries in gas circulation in the bore, gaps between segments, and nozzle from various causes; the bond between the metal case and insulation, and the role and properties of putty or alternative means for protecting the O-rings from exposure to hot gases. The previous design employing two pressure-activated O-rings was adopted in response to the requirement that the seal be both redundant and verifiable. The redesign program focuses on joint designs that employ a double clevis arrangement to reduce rotation and either two or three O-ring seals, among other things. It is not clear to the Panel that two pressure-activated O-rings always provide redundancy.

In these early stages of the redesign program, it is important to maintain consideration of a diversity of designs, including both modifications of the proposed double-clevis joint, and simpler alternatives such as reinforcing the case walls to reduce rotation. An array of alternatives should be investigated and carried through the redesign process as far as is practical.

Additional discussions of joint redesign are scheduled for an early August meeting of the Panel.

The Nozzle

The nozzle of the SRM has experienced serious problems in the nozzle-to-case joint and the ablating material in the nozzle itself. Work to correct these problems has been underway for several years but much more needs to be done. Alternative designs in which joint rotation tends to close gaps between parts rather than to open the gaps (as in previous shuttle SRM designs) appear to be inherently safer. We recommend that NASA include such designs in the redesign program.

Materials

Materials have always posed serious challenges in solid propulsion rocket design and new problems are emerging. Clearly the putty used heretofore in the SRB is one such material. The expected and actual performance of the putty seem quite unclear. Designs are being considered that do not require its use.

Results of the investigation of the Titan accident suggests a new materials problem, a potentially erosive interaction between molten alumina and the steel case, that accentuates the need to avoid exposing steel casing to propellant gases. We recommend that this phenomenon be researched vigorously because of its potential importance for the safe design of future solid rocket motors. We also recommend that NASA review its requirements and specifications for assurance of the adequacy of bonds in light of this recent development.

There is also a great dependence on bonded materials without techniques for assured inspection of bonds. Progress is currently being made in non-destructive inspection techniques, but they still leave great room for improvement. We recommend that NASA carefully monitor development of techniques for non-destructive testing of bonds being carried out by the Air Force and apply the techniques, if appropriate.

It may also be anticipated that asbestos, currently incorporated into the inhibitor material for the SRM, may not be available in the future. We recommend that NASA consider developing and qualifying asbestos-free insulating materials for the SRM within the current redesign effort to avoid a subsequent requalification when asbestos is no longer available.

Quality control procedures for materials supplied by vendors appear to have depended largely on the ability of product specifications to define adequately and completely the material to be supplied, backed up by the qualification of vendors, at least for critical items. This procedure is not adequate for many materials, polymers in particular being notorious for their inability to be completely described by product specification. The system should be strengthened for most components by: qualifying vendors' vendors (and in a few cases, such as the O-rings, vendors' vendors' vendors) and imposing a process "freeze" on the part of vendors (and vendors' vendors, etc.) with requalification required for any process change. We recommend that NASA review the experience of the military with control and surveillance of materials for its solid rocket motors and where applicable adapt that experience to the SRM program.

Testing

The fact that a solid fuel rocket can never truly be tested except in flight places unusual emphasis on adequate subscale and full scale testing with appropriate simulations and statistical analysis. It is our first impression that the proposed test program at best only meets a minimal requirement; it is clearly success oriented. The Panel needs more information on the detailed tests to be conducted before we can reach an opinion about the feasibility of meeting the current test schedule, but it appears clear that the planned sample size may not be adequate for testing all specified requirements. An opportunity exists, however, to reduce some limit testing through design choices, for example using heaters at the joints would obviate the need to test joints at cold temperatures.

The special issue of vertical vs. horizontal testing is still open and will be further discussed when the Panel meets in early August. Dynamic performance of the shuttle system and its effects on the SRB need both testing and analysis. The critical issue is the extent to which the actual dynamic conditions of launch and flight can be simulated in a vertical test stand. A corollary issue is whether vertical testing provides enough additional data--or indeed as much useful data--as to be worth the additional cost. For equivalent expenditures and time, a larger number of horizontal tests can be performed.

Sincerely,

H. Guyford Stever by mfh

H. Guyford Stever
Chairman
Panel for the Technical Evaluation of
the Redesign of the Space Shuttle
Solid Rocket Booster

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

October 10, 1986

The Honorable James C. Fletcher
Administrator
National Aeronautics & Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, DC 20546

Dear Jim:

I am pleased to submit herewith the second interim report of the National Research Council Panel for the Technical Evaluation of the Redesign of the Space Shuttle Solid Rocket Booster. The purpose of this letter is to provide an independent technical evaluation of the progress of the redesign program thus far.

Background

During August and September, the Panel formally met twice with personnel of NASA Headquarters, Marshall Space Flight Center, and Morton Thiokol, Inc. The Panel also conducted a visit to the Kennedy Space Flight Center, where we inspected recovered parts of Mission 51-L, were briefed on techniques for recovering spent solid rocket boosters (SRB) from the ocean, and witnessed a demonstration of the preparation of booster segments for mating. Members of the Panel visited the Rocket Propulsion Laboratory at Edwards Air Force Base to inspect the dormant vertical test stands there, and some attended the meeting of the Program Requirements Review Board. Members also revisited Morton Thiokol for more thorough exchanges with the company's engineering personnel.

Perspective on the Redesign Program

The redesign effort has progressed greatly in these two months, principally refining in detail the earlier redesign ideas for the case field joint, igniter, and nozzle joints, as well as for changes of the nozzle linings. The focus of the effort is still on designs that will permit the use of booster rocket case forgings ordered previously. If this approach is successful, i.e., if the test program succeeds and the level of safety is judged acceptable, the Shuttle flight program can resume at the earliest time. The Panel concludes that the chances of success of this approach are sufficiently good that it should be pursued.

The New Baseline Design

The baseline design of the new case field joint incorporates a capture feature that engages the inside leg of the clevis to restrict relative motion between the tang and clevis. We concur that the design will significantly constrain the motion.

There are however a number of practical aspects of the design that are uncertain and of concern. The increased rigidity of the joint will cause additional bending stresses to be carried by the case membrane on either side of the joint; the additional stresses need to be fully understood. The capture feature may make mating and demating the segments more difficult than in the past. The multiplicity of additional seals in the new design (an adhesive bond in the insulation, the O-ring on the capture feature, and the metal-to-metal interference fit of the capture feature) will make it difficult to qualify and verify by test the primary and secondary pressure seals, which by definition are the two O-rings between the clevis leg and tang. While the bond between facing insulators is not intended to qualify as a pressure seal, it will normally prevent exposure and evaluation of the metal joint during qualification tests (as the putty did in previous tests and flights). The new design imposes more stringent dimensional tolerances and the effects of reuse in meeting the tolerances remain to be determined. These and other uncertainties must be resolved through a vigorous test and engineering program.

Regarding design of the insulation in the gap between case segments, the Panel notes that the baseline bonded insulator designs, while advantageous for protecting the metal joint and insulator-to-case bond, may also pose problems with assembly and demating. Alternatively, an unvented joint may be obtained without using an adhesive by employing unbonded insulating materials to fill the gap between facing inhibitors. The inserts would have to be compressed during assembly and be sufficiently resilient to accommodate the expansion of the gap that occurs at ignition.

The program has also considered and will test a vented design employing a labyrinthine gap between ablative surfaces that causes combustion gases to travel a longer distance before reaching the joint. This design as presented may prevent hot combustion gases from impinging on the pressure seal components. Alternative approaches to a vented design may also be practical, including those intended to assure that any gases reaching the joint have cooled to acceptable temperatures. Such designs, which have not been considered in the program, could, for example, employ porous ablative materials in the gaps between segments to act as thermal barriers. The structure could incorporate a volume or reservoir of relatively cool, stagnant combustion gases between the mated insulating segments upstream of and in series with the first seal along a potential leak path. This volume could be filled with a porous ablative material that would physically inhibit gas exchange and absorb the sensible heat that enters the reservoir. This approach could also, of course, be used with an unvented insulator design adding further to its overall reliability. In either case, such a reservoir should be designed to dampen acoustic oscillations in the gap.

Pending the results of full scale tests, the Panel regards both vented and unvented insulator designs as potentially satisfactory. Therefore, the Panel recommends that both vented and unvented designs be pursued in parallel in the development effort. This recommendation is based on serious concern about the validity and scope of the testing of the baseline (bonded) design.

The Panel urges that a final decision on the design of the insulation between segments be delayed until:

a) the performance of both unvented and vented designs has been evaluated in full diameter, full duration tests; and

b) the feasibility of assembling and disassembling the unvented design is evaluated.

Tests of potential O-ring materials performed to date have resulted in the identification of three elastomers that hold promise for use in field joints. Unfortunately, because end item specifications are not generally effective for controlling elastomer formulations, uncertainties may arise regarding the exact composition of the tested materials. To avoid future problems, we strongly recommend that any candidate materials be thoroughly defined, in cooperation with their suppliers, in formal advance specifications. As described in my letter of August 1st, we believe that the best approach would include specifications, even for test materials, by product, process, and supplier at all levels and to "freeze" these specifications. These should supplement performance specifications for O-ring materials.

The O-ring materials being considered retain the capacity to follow the gap opening at low temperatures. In light of reduced gap openings and improved cold-temperature resilience, the use of supplementary heaters should not be necessary. It seems prudent, however, to continue to develop the heaters as a precaution in the event that these materials cannot be used for some reason.

The Panel also notes that the new O-ring materials are intended to be used in the case factory joints, which will not otherwise be changed. The factory joint is fundamentally different from the field joint. We do not understand the rationale for changing the O-ring material in the factory joint. It is also not clear to us why the program continues to use spliced O-rings. While an acceptable O-ring can be made either by splicing or by one-piece precision molding, good industrial practice avoids splices.

The Shuttle solid rocket motor (SRM) has frequently experienced "minor" debonding between the case and insulation. Reliability of case-to-insulation bonds can be improved if procedures for removing grease from the metal can be enhanced or substitutes found for the grease that is used as protection against rust. We recommend first that recent improvements in the technology for testing bonds nondestructively be exploited fully and second that any detectable debonds be appropriately repaired before flight.

The Panel still has under consideration design issues in the case-to-nozzle joint, joints within the nozzle, and the igniter. These elements of the SRM are as important for the success of the redesign as the case field joint. The baseline design of the nozzle introduces many more bolt holes, leak check ports, and pressure seals. Reliability could be reduced by some of these changes.

The Test Program

Much progress has been made in laying out the program of tests, which has begun. Significant results, for example from the Joint Environment Simulation test, have already been obtained, but there is still much to do. The success of the redesign effort rests on the test program.

The Marshall and Johnson teams and their contractors have briefed us on the potential role of a full-scale vertical test firing, including structural dynamics, in the test program. They have made the point that a variety of horizontal firings and other tests can, in fact, verify the essential features of the new design. It is further argued that a vertical firing on a test stand will not reproduce the precise conditions experienced during launch and flight. The design team has recommended against incorporating a vertical firing in the program. The Panel notes that the desirability of vertical testing has been evaluated by NASA and concurs that horizontal testing can be appropriate for this situation. We conclude however that to be comprehensive, the totality of the test program must include simulation of the dynamics of launch and flight.

Design of the test program to simulate these effects should take into consideration how loads are actually transferred from the solid rocket booster (SRB) to the External Tank through both fore and aft struts, the dynamic conditions known as "twang", and vectoring of the nozzle under flight conditions. Some members of the Panel believe that this is best accomplished by constructing a new full scale horizontal test stand both to be used as an alternate to the current facility and to provide a facility suitable for conducting dynamic tests of the structure, nozzle, seals, etc. The new test stand should be constructed so that loads can be taken out through realistic struts, a displacement to start the twang oscillation can be imposed, and a complete simulation of nozzle vectoring can be obtained.

We recommend the creation of an additional horizontal test stand to accommodate and test full-scale motors both to provide the capability of performing more tests and to reduce the risk to the program should a catastrophic failure occur during a test. We also believe that a second Joint Environment Simulator test stand and associated hardware is warranted and should be established.

Regarding other aspects of the test program, the Panel offers the following comments and recommendations:

a) The current test schedule envisions only one full scale, full duration test of the new nozzle that incorporates all the changes of the redesign. We recommend additional full scale, full duration testing to assure that the various elements of the design, including ablative material and additional pressure seals and leak check ports, operate as expected over the range of conditions imposed by the requirements. In our opinion, a single full scale, full duration static test of the redesigned nozzle (prior to the first flight) is simply not sufficient. The number of tests required depends on the results of the tests and professional judgment.

b) We endorse whole-heartedly the concept of testing articles that have incorporated inflicted flaws.

c) We believe the testing program should be designed to distinguish between alternative designs regarding performance. For example, both vented and unvented joint insulation designs should be tested in regimes in which the alternatives could be expected to behave differently.

d) In light of the specification that Shuttle components must be acceptable after five years' storage before flight, a test and surveillance program should be established that will ensure satisfactory performance of components, such as O-rings, prior to use. Representative samples of O-ring materials applicable to each assembled SRB should be stored in a compressed state in an appropriate fixture to simulate the environment of the assembled O-rings. These materials should be tested for dynamic resilience as a final verification before launch.

e) The tests should be fully instrumented so that incipient failure modes can be identified.

We plan to conduct a continuing review of the test program, including instrumentation needs and the simulation of dynamic conditions of launch and flight, and the results over the next several months. Our next interim report will address the test plan in detail. We also will continue to review aspects of the design including assembly and disassembly of field joints and reuse.

Alternative Design Considerations

The alternative designs being considered by NASA meet the constraint of using the case forgings that have already been ordered. The alternatives employ various designs for the insulation in the gap between segments, such as the labyrinthine vented joint or the cooler-gas vented joint. At least one such alternative will be included in the test program; we hope that several of the more promising candidates can be pursued through testing.

Alternatives to the baseline designs of the metal parts of both the case joint and the case-to-nozzle joint also exist which have not been thoroughly explored on the grounds that they will not be compatible with the forgings which have already been ordered. We recognize the importance to the nation of returning the Space Shuttle to service without unnecessary delays. If, however, the design process were not constrained by the forgings, we believe that more basic alternatives to the baseline design would probably be preferred once thoroughly analyzed.

For example, it is possible to design both case and case-to-nozzle joints, without capture features, that tend to rotate closed upon pressurization or not to rotate at all. Similarly, modifications of the simple tang-and-clevis joint, such as by changing the dimensions of the parts, might reduce the rotation substantially. The concept of a joint that rotates closed or does not rotate at all might be implemented for the case joint either with bolted flanges, as suggested by the group at NASA/Langley Research Center, or with a pinned tang-clevis joint. With the pin concept, the tang-clevis joint would have to be drawn into a smaller radius than the case cylinder. This approach might be accommodated by the current billets. Using either technique might result in the reduction or elimination of joint rotation by design rather than mechanically by using a capture feature.

We strongly recommend that NASA maintain a program to explore and develop original, possibly quite different designs for the next generation of SRB in parallel with the current redesign effort and for the contingency that the baseline design may not offer sufficiently good performance and margin of safety. In particular, an alternative SRB should take advantage of designs that are insensitive to or will benefit from the structural deformations that occur after ignition.

Requirements, Specifications, and Institutional Relationships

There does not appear to be a very clear separation of organizational responsibility for defining requirements or specifications and designing the hardware. The Project Office at Marshall not only develops requirements and reviews and approves designs, but also is deeply involved in the detailed design process. Thus it can happen that the design team can also approve waivers to the basic requirements. We conclude that a clear separation of the responsibilities for specifying requirements and implementing a design to meet those requirements would allow designers greater flexibility to consider alternative solutions and assure a more independent evaluation of the design in light of requirements.

Several issues were raised by Panel members regarding specific requirements for the redesign during the Program Requirements Review Board meeting on August 26-27. Of these, we include the following points here:

a) We understand that the baseline design may not satisfy all the requirements. Some requirements, in fact, are actually design specifications. It appears to us that NASA may be setting itself up for new waivers as a consequence. We recommend that NASA carefully reconsider the design requirements to assure that unnecessary specifications are not incorporated that will necessarily result in waivers.

b) A number of different types of safety factors are quantitatively imposed by the requirements. However, they are only loosely defined in terms of what specifically should be measured, the method of measurement, and the details of the method of calculating safety factors.

c) There seem to be different interpretations of terms such as factor of safety, redundant, verifiable, etc. We believe that it is important that concise, quantifiable definitions be prepared and used.

Summary

In summary, we have concluded that the chances for success with the current approach to case field joint redesign are sufficiently good that it should be pursued. This choice is the consequence of the understandable desire to use existing hardware to the greatest extent possible, including new case forgings previously ordered. The baseline case field joint will be difficult to evaluate by test. Implementation of alternative designs for metal joints, which may prove to have significant advantages, would take considerably longer but should be pursued in parallel with the current redesign program.

The success of the redesign effort depends on the test program. We believe that the planned test program requires significant augmentation with additional facilities and tests. It need not, however, include a full scale, full duration vertical test provided the static and dynamic loads of launch and flight, separately and in combination, are appropriately simulated elsewhere in the program.

Sincerely,

H. Guyford Stever
Chairman
Panel for the Technical Evaluation of
the Redesign of the Space Shuttle
Solid Rocket Booster

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

January 15, 1987

The Honorable James C. Fletcher
Administrator
National Aeronautics & Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, DC 20546

Dear Jim:

I am pleased to submit herewith the third interim report of the National Research Council's Panel for the Technical Evaluation of the Redesign of the Space Shuttle Solid Rocket Booster. The redesign effort is currently in transition from a period devoted to creating the so-called baseline design using analytical techniques to one concentrating on testing the concepts and hardware. The purpose of this letter is to critique the program at this stage.

Background

Since early October, the Panel has met formally three times. In addition, groups of our members have participated in a number of technical meetings with personnel from Marshall Space Flight Center and Morton Thiokol, Inc. Members have visited Latrobe Steel Company and the Ladish Company to review capabilities for producing steel cases for the motor and the U.S. Air Force Space Command to discuss methods of nondestructive evaluation of insulation bonds, as well as other aspects of the redesign that might benefit from the Titan SRM program. We have also kept up to date on the progress of the contractors who are developing concepts for a Block II motor.

Current Status

NASA's goal is to return a safe and reliable Shuttle to service at the earliest possible date. To meet the goal, the NASA team has chosen a baseline design and is in the process of organizing and implementing a testing program to verify that the design meets the requirements of the program. The redesign baseline is aimed at correcting the causes that contributed to the failure as well as other elements of the original design that showed signs of trouble in flight or that do not meet the new design criteria. Most decisions have been made as to which features need complete redesign, which need modification, and which can remain the same as before. Only those changes considered mandatory for the next flight are being made.

Only if the verification program goes very well can NASA's schedule be met; care must be exercised in the ground-test program to assure that the design is adequately demonstrated. Morton Thiokol is well started on this program and should be strongly supported in its pursuit.

As discussed in an earlier report of our Panel, however, the test program is success-oriented. By this, we mean that the schedule for the program reflects an assumption that each test will produce results that are expected and understood; there is little room in the schedule for modifying the design if this does not prove to be the case. Preliminary tests have already produced results that were not anticipated. For example, O-ring materials with better low temperature resilience were found to deteriorate when tested after extended exposure to the rust-inhibiting grease, with the result that the baseline design now uses the original fluoropolymer O-rings with heaters to maintain an appropriate temperature.

It is prudent, therefore, to plan for contingencies, particularly for those elements of the design for which substantial uncertainties remain. If an aspect of the design is shown not to meet safety objectives, an alternative should be available to carry the program forward. In some areas the program has incorporated alternatives to the baseline design. Nonetheless, we are concerned that valuable time would be lost should it become necessary to turn to one or more of the alternatives as a consequence of something learned from the test program. Further, now that the NASA/Thiokol redesign team is nearing the completion of the selection of the baseline design, it should be able to increase its efforts on preparing for contingencies. We recommend, therefore, that NASA strengthen its contingency plans for incorporating alternatives into the program.

Aspects of the design that warrant more contingency planning include the case field joint, the case-to-nozzle joint, and configurations of the insulation at both the case and case-to-nozzle joints. Materials for which contingencies should be in the program include the ablative materials in the nozzle, O-rings, and the rust inhibitor. Options currently in the program are limited. For example:

- The Panel still believes that contingency planning should include the design, fabrication, and testing of a case field joint that closes under pressurization. We understand that such a design can be obtained without changing the configuration of the existing forgings, but the first step in this process is to order the appropriate forgings, which has not been done.

- Currently, there is no real alternative in the program for the baseline design of the case-to-nozzle joint, which incorporates a large number of new bolts and bolt holes, hence complex stress patterns and potential leak paths. We consider the lack of an alternative to be serious since the joint is critical for safety, few tests of the final configuration are planned, and they occur late in the test program. We recommend that alternatives be established and special emphasis be placed on early, meaningful tests of the design.

- The baseline design of insulation at the field case joint incorporates an adhesive bond between opposite sides of the gap. Two variations of this unvented design are being studied, called the J-seal and U-seal. The backup design, a vented configuration, will be evaluated in subscale tests and a full-duration, full-scale test firing, but it is not being carried forward on a schedule that would permit its inclusion in the program without a delay. The baseline design of the case-to-nozzle joint also incorporates an adhesive bond. NASA should anticipate that the details of the insulation design at both joints, whether unvented or vented, will continue to change and we recommend that the Agency provide for additional insulation tooling to enhance the flexibility of the program.

Significant changes in estimates of loads in the SRB and both of its interfaces with the External Tank have recently been reported to us. In light of these changes and the crack in an aft skirt during a recent structural test, we recommend that stress analyses of the booster and its parts be carefully reviewed and, as appropriate, calculated again using the best data and most up-to-date models.

The Panel has additional technical comments and recommendations on the current design and testing program, which are presented later in this report.

Perspective on the Future

Not all the changes that the engineering team would like to make in the solid rocket motor will be made before the next launch. By directive from NASA headquarters, the redesign effort is focussing on identifying those changes essential for adequate safety or reliability for the next flight. The purpose is to avoid a dilution of effort on the mandatory changes, which could delay the Shuttle's return to service. We concur with this approach in principle.

Beyond the changes deemed mandatory for the next flight, however, additional changes may also be needed further to enhance its safety and improve its reliability, performance, and cost effectiveness. The solid rocket booster, no less than other technological products, should continually be improved by changes driven by the results of tests and data gathered during use. It is our impression that the ongoing technological program that supported improvements in the reliability of the Shuttle solid rocket motor before the accident was limited compared with that for improving performance.

We recommend, therefore, that NASA establish and maintain a directed program for continued evaluation and improvement in reliability after flights are resumed, including all of the following: use of flight instrumentation for diagnostics throughout the flight program; continuing evaluation of flight results and recovered hardware; continuing ground testing to understand and, as necessary, improve the hardware promptly; and preplanned block changes to the flight hardware to provide opportunities for incorporating desired improvements.

In the long term completely new designs, possibly radically different from the current one, may be preferred. The nation's manned space flight program cannot afford to continue to rely on older technology indefinitely into the future. Consequently, we believe that NASA should vigorously pursue a program to develop the next and future generations of motors for use in the space transportation system. The studies of alternative concepts for the SRM that NASA commissioned in 1986 is a commendable step in this direction.

The program outlined above--including near-term changes to meet immediate goals, intermediate-term changes for product improvement, and long-term changes to incorporate substantially improved technology--can only be accomplished with the support of research and development. Not all of the required R&D can be accomplished within the current recovery program, so it may be necessary for NASA to include appropriate activities elsewhere within its programs.

Additional Conclusions and Recommendations on Technical Issues

The Case Joint. We are concerned that the baseline design may not readily allow for reworking or inspection of the hidden surfaces of the capture feature. We conclude that this problem requires special attention since it could be sufficiently serious to prohibit reuse of the case segments if the finishes and absence of corrosion cannot be satisfactorily verified.

The baseline design now specifies fluoropolymer O-rings lubricated with HD-2 grease, as used in all the previous flights, with heaters to maintain the O-rings at the temperature (75°F) required to assure a satisfactory seal. The Panel is concerned with this development because of added complexities and potential reliability problems associated with the heaters. For example, overheating the joints could adversely affect adhesive bonds, which are invariably weakened at elevated temperatures, or the properties of components, such as O-rings or grease, in unpredictable ways. It seems likely that an alternative grease can be found or formulated that will both have acceptable corrosion protective properties and not interact adversely with the silicone or nitrile O-ring materials. We recommend that a priority effort be aggressively pursued to improve understanding of the properties of these materials and to develop a better combination of O-rings and grease for use as soon as possible.

The redesign team has considered two concepts for the design of insulation between adjacent segments, vented and unvented, and has selected the latter as the baseline approach. In this concept, a properly functioning insulation would shield the metal joint from combustion gases. Should a leak occur in the interface, however, the joint has been designed to inhibit further propagation of the high-pressure gases through the O-ring seals. The small joint rotation anticipated with the capture feature, interference metal fit between the clevis leg and capture feature, and three O-rings are configured to provide redundant protection in sealing against various upstream leak scenarios. Because the unvented insulation design, if successful, will shield the O-rings from exposure to pressure on hot gases, tests with imposed flaws are particularly important for determining the adequacy of the design of the seals.

In response to the requirement that pressure seals be verified, the program envisions testing the O-rings after assembly by applying pressure through ports. Applying an inappropriate pressure could damage the insulation or bond line between case segments. We remain concerned with this issue and expect to pursue it further as verification procedures are developed.

The Nozzle. The Panel currently perceives that uncertainties in the design and hence risk to the program are now greater in the area of the case-to-nozzle joint and for the other aspects of the nozzle than in the case field joints. Unlike many of the issues associated with the field joints that can be resolved to a reasonable level of confidence with subscale or short duration tests, several of the critical questions on the nozzle design can only be really answered with full scale, full duration testing.

Mating and sealing the segments of insulation at the case-to-nozzle joint is a very different proposition from that at the case field joint. During assembly of the case-to-nozzle joint, the insulation on the fixed nozzle housing must slide for several inches over the insulation on the aft dome, complicating design of the insulation and adhesive for an unvented design. Here the method of sealing of the mating segments of insulation is still open to question. We recommend continued modelling and subscale testing of alternatives that insure that only cooled, low momentum gas can reach the O-rings in the event of a leak in the seal between mating segments of insulation at the joint.

The general requirement for pressure seals to be redundant and verifiable is being applied in the current baseline design to all of the internal nozzle seals. This requires the addition of a second O-ring in many cases and the addition of ports to verify and seat the seals. The second O-rings are intended to enhance reliability, but overall reliability may not be increased because of the penetrations of the nozzle added for the purpose of verifying the O-rings.

Tests of the nozzle ablative materials will not be performed until late in the verification program. Marginal or unsatisfactory performance in these tests could severely affect the schedule for the next launch. There are no backups in the program for design of the layup of ablative materials in the nozzle. Given the empirical nature of the technology and its unpredicted behavior in past flights, we recommend that, in addition to the planned full scale, full duration tests of the nozzle, the redesign team undertake a series of subscale, long duration firings to evaluate the conceptual basis and materials technology for the redesign of the ablatives.

The Test and Verification Program. As indicated in an earlier report, we regard the proof of the redesign to depend on the results of the program to test it and verify that it meets the requirements of the system. The test and verification program is just getting underway and is still evolving. Some preliminary tests have been conducted, but firings with new case hardware are not expected before March, 1987. The test program appears to be somewhat constrained by the ability of the support organizations to provide test articles, instrumentation, etc. We intend to follow the development and progress of the test program carefully. Meanwhile, we make the following observations and recommendations.

While we continue to see progress in the definition of the total test program, it is difficult to relate the objectives of each of the numerous tests to specific design requirements or to develop a sense of the coherence of the test program in terms of its support of the development effort. Clear plans that relate each test to specific design requirements or to the development of specific components or subsystems would help to assure coherence of the total effort.

For NASA to accept a design as safe and reliable, we believe that the Agency should be convinced that it understands how the design will behave throughout the range of conditions that the SRB is intended to experience. Recognizing that it may not be practical to test the design throughout the range of conditions, NASA plans to verify some aspects of the design by analysis rather than by test. Verification by analysis relies on the use of analytical and computational models, so to incorporate this technique requires that the models be validated by experiment. We recommend that tests within the current program also be instrumented specifically to validate the models.

The verification program is aimed at determining if the design meets requirements, but it should also have the value of enhancing confidence that the redesign team understands how the design works. The Presidential Commission concluded that neither NASA nor its contractors understood the previous design very well. To assure better understanding, we recommend that before each major test in the verification and qualification program the redesign team make explicit analytical predictions of the performance of the test article; the results of each test should be examined in light of the predictions and any discrepancies fully explained. Criteria for successful verification in each test should also be established a priori to assure the objectivity of the test program. These are common engineering practices and are applicable to the Shuttle program.

The Panel expressed concern in its last report over the limited capacity of full scale test facilities. We believe that the addition of another full scale, full duration firing test stand capable of simulating dynamic loads is a major step forward in that regard. Conditions that should be simulated on the stand include launch loads and the most severe flight conditions. We have recently learned, however, that the new facility may be limited in its capability to simulate these loads and further that estimates of the maximum loads are being revised downward. We are concerned both about how well the loads are understood and the adequacy of the new facility. We recommend that the design of the stand be carefully reviewed to assure that the test results will be most useful.

NASA apparently has concluded that another Joint Environment Simulator (JES) test stand is not needed because additional test hardware will allow more frequent tests on the existing stand. Each of the three JES tests conducted to date (using case joints of the original design) yielded results that were not predicted by prior analyses. For example, tests have shown that the extent of joint gap opening depends on whether pressurized gases reach the region between the clevis leg and the tang. The JES-1B test showed that the silicone O-rings cannot be used with the current grease. JES tests also revealed that pressurized gases can leak past the seals significantly before the occurrence of the peak pressure or peak gap opening. These tests have provided extremely valuable data and insight into the behavior of joints. They also supply data to improve the analytical models. We concur that additional test hardware for use in the current JES and the related Transient Pressure Test Article will enhance the full scale test capability. If the rate of timely testing in these facilities is not sufficiently enhanced by addition of test hardware, we recommend that NASA reconsider its decision not to build an additional stand.

At this writing, NASA has not formally approved the firings of Qualification Motors 7 and 8 before flight. In view of the number of features of the new design that depend critically on full scale, full duration testing, the Panel recommends that these be approved and incorporated into the test program immediately. Furthermore, the Panel believes that the dynamic tests in full scale, full duration firings with structural deformations to simulate launch and flight loads must be completed before flight.

Finally, we are grateful for the cooperation that we have received from NASA, Thiokol, and other personnel. The redesign team deserves praise for its dedication and hard work.

On behalf of the Panel, I remain,

Sincerely,

Guy

H. Guyford Stever
Chairman
Panel for the Technical Evaluation
of the Redesign of the Space
Shuttle Solid Rocket Booster

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

June 22, 1987

The Honorable James C. Fletcher
Administrator
National Aeronautics and Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, DC 20546

Dear Jim:

I am pleased to submit herewith the fourth interim report of the National Research Council's Panel for the Technical Evaluation of the Space Shuttle Solid Rocket Booster. The baseline design is essentially complete with only a few choices remaining to be made. The program of testing full scale implementation of the design is about to begin. This report addresses several of the more important questions remaining about both the design and the verification program.

Background

Since submitting our third report, the Panel has met formally four times. In addition, groups of our members have participated in four technical meetings with personnel from the Marshall Space Flight Center, Johnson Space Center, Langley Research Center, Morton Thiokol, Inc., and several of its subcontractors. Members have visited several subcontractors to review capabilities to cut and finish case hardware. The cooperation that we have received from personnel from NASA and Morton Thiokol has been outstanding. The members of the redesign team have shared their technical insights and information about the program graciously and effectively.

Current Status

The direction of the redesign program has not changed significantly in the last several months. The focus of attention has been on refinements to the baseline design and preparation for testing the new design to verify that it meets specifications.

Schedule. The realities of this complex redesign, development, manufacturing, testing, and verification program, however, have forced substantial delays in the test program. For example, the first test of the new case field joint hardware in a short-duration burn, originally scheduled for January, now will not take place until the end of July. We understand that the need to prepare new mold tooling for the insulation of the modified J-seal design contributed in part to your decision to change the launch schedule from February to June 1988. The target date for delivering the first flight set to Kennedy Space Center has changed by about two months, to the middle of December 1987, still leaving considerable pressure on the booster testing program.

Contingencies. More attention is now being paid to contingencies, but we remain concerned that alternatives for certain critical aspects of the design are not being pursued with sufficient vigor to minimize delays in the program should it become necessary to turn to alternatives. We understand the view of the program office that the delivery schedule will only be met by concentrating intensively on the baseline design--the principal need for this concentration being the shortage of manpower rather than budget. However, as we have stated before, paying greater attention to the development of alternatives could, on balance, reduce the risks to the schedule.

The types and levels of risks to schedule and performance that are acceptable can only be decided by NASA management. We understand that you have reviewed the program's plans for pursuing design alternatives in critical areas in light of the schedule for delivery and launch and have decided that the risks to the program are acceptable.

The Development and Verification Program

The firing of the full-scale, full-duration Engineering Test Motor (ETM-1A) on May 27th raised the curtain on the most important part of the development and verification program. Although the ETM-1A could not incorporate much of the new hardware, the firing has given useful engineering information and exercised both the test facility and personnel. The essential features of the two most critical aspects of the new design, the case field joint and case-to-nozzle joint, will first be tested in the full-scale, full-duration firing of Development Motor No. 8, currently scheduled for August 23rd.

Reliability and margins of safety. Contemplation of the next year of scheduled full-scale, full-duration firings of demonstration and qualification motors and the tests of full-scale hardware for short duration, reminds us once again of the unique feature of the solid propellant rocket: the flight article itself cannot be test-fired before launch. To compensate for this characteristic, the test program must establish reliability and margins of safety in special ways. Furthermore, extraordinary care must be taken to assure that the materials and processes used to fabricate and assemble both test and flight articles are tightly controlled so that all are, as nearly as practical, identical.

It is clear that conducting a statistically meaningful number of full-scale, full-duration ground tests of the redesigned motor to establish reliability and margins of safety is not feasible. In circumstances such as these, several practices can be undertaken to increase confidence in the design. One is to make detailed predictions of performance before major tests to demonstrate understanding by comparing the predictions with the results of equally detailed measurements. The redesign team intends to make explicit predictions in its test plans in the future and we will follow progress in this regard closely.

Testing with defects. A complementary method is to test the adequacy of margins of safety by introducing intentional flaws or defects into test articles. The redesign program relies on testing with inflicted flaws to verify the design where the flaws are of types not likely to be detectable by available methods of inspection. Tests with inflicted damage currently must demonstrate not only that the primary and redundant secondary seals are not violated under these conditions but also that they do not show signs of thermal distress.

Since all types and sizes of flaws cannot be tested, a key issue in this regard is what constitutes the most severe flaw that has a reasonable probability of occurring. Testing with flaws that are not likely to occur in practice may yield meaningless or misleading results. Subscale tests have shown that a small direct path between mated parts of the insulation can result in a gas jet that impinges on an O-ring. Major damage can result from such a flaw. Not clear is whether these "engineered" flaws are representative of the most serious defects that might be expected to result during manufacturing and assembly. We conclude that determination of the "worst credible" flaw is essential for the success of the certification program.

Another possible cause of thermal distress is circumferential flow around the periphery of the joint. The JES test series, which has provided much understanding, has a burn duration of less than one second. There is concern that this duration may not be sufficiently long to reveal other possible modes of failure.

Case-to-nozzle joint. The area of our greatest concern regarding testing with inflicted flaws, however, is the case-to-nozzle joint. Defects in the form of holes in the adhesive may be introduced as the nozzle housing slides past the case dome during assembly. Since the integrity of neither the adhesive nor the wiper O-ring will be assured by test after assembly, neither can be considered seals. Thus, the performance of the nozzle must be tested with defects in both. In our opinion, the probability is high that the primary O-ring will experience thermal distress when tested with a flaw that extends directly through both the adhesive and wiper O-ring. Therefore, we conclude that the current baseline design of the case-to-nozzle joint is likely to fail to meet the requirement prohibiting the appearance of thermal distress when tested in the presence of this flaw.

Consequently, we recommend that the redesign team address this problem with urgency. The worst credible flaw should be determined systematically using assembly demonstration tests and supporting analyses. Potentially modest modifications of the design which might preclude O-ring damage with such flaws should be reviewed. Aggressive pursuit of an alternative design, including acquisition of hardware and testing, also appears warranted to minimize consequences for the schedule if the current design or modifications of it cannot meet requirements.

Verification of pressure seals. Another matter of concern is the development of satisfactory procedures for verifying the O-ring pressure seals after assembly. The maximum allowable leak rate past pressure seals must be below the rate that would result in thermal distress, including erosion, of the O-rings but not so low that it cannot reliably be detected by the adopted method. The redesign team currently favors a maximum leak rate of 0.01 standard cubic centimeters per second. The current leak check protocol includes establishing the test pressure in a volume adjacent to the O-ring and watching for a decay of 2 psi within 10 minutes. Laboratory tests conducted by the redesign team indicate that thick coatings of the grease can interfere with the detection of leaks of this size. However, large amounts of grease are also thought to protect against leaks during firing. Removing as much grease as possible may assist in the detection of smaller leaks but may make the design less forgiving in operation.

Testing at high pressure may also reveal small leaks, but the procedures are sensitive to very small changes in temperature. Under current leak check protocols, changes in temperature of the order of a few tenths of a degree Kelvin at a test pressure of 1,000 psi can falsely either indicate a leak or mask one. Also, the higher the test pressure the greater the potential for damaging the insulation, insulation bond lines, or O-rings.

Work is underway to develop the most appropriate leak check procedures in light of the several trade-offs involved. The additional data from this program should be available in the next month. Further analysis and testing appears to be in order to determine if a higher maximum leak rate, hence lower test pressure, might be acceptable. Also, in some cases it might be appropriate to measure leak rates using alternative approaches, such as by measuring the buildup of test or tracer gases downstream of a seal rather than by measuring the decay of the test pressure upstream.

Nozzle Ablatives

The redesign of the internal parts of the nozzle incorporates the carbon-phenolic materials used in the previous design, with changes in the orientation of the carbon fibers in the matrix and improved specification and quality control of materials. The changes are intended to provide reduced, more consistent erosion and to eliminate fracture problems. Early evaluation of some features of the new design (fiber angle in two nozzle parts) has been provided by three full-scale static tests (two in the filament-wound motor program and the ETM-1A). Because the performance of ablative materials is relatively unpredictable, a number of tests are needed to establish the adequacy of the design, materials, workmanship, and production. Thus far, we are encouraged by the work on redesign of the ablative parts of the nozzle. Nonetheless, as many tests of these parts should be scheduled as practical. Furthermore, the performance of the ablative parts in particular, should be closely monitored and evaluated by inspection of recovered flight motors on a continuing basis beyond the verification phase of the program.

Materials and Process Control

As we previously observed, a successful solid rocket motor program depends on careful control of the materials and processes used to manufacture both the test and flight articles. The manufacture of nonmetallic parts under carefully defined specifications is a continuing concern.

O-ring material. The effort of the past year to find an O-ring material with better low temperature resilience while meeting all other performance requirements has not been successful. Therefore, we agree that the fluoroelastomer used previously is an appropriate choice at this time since it will be used in combination with the modified metal parts and heaters to provide temperature control and hence satisfactory resilience.

Specifications. An accurate and thorough definition of the fluoroelastomer material is urgently needed, however. The specifications supplied to us to date are incomplete. Once the final specifications are determined, it will be necessary to review the existing inventory of O-rings to verify that they were manufactured and tested in conformance with the specifications. Similar comments apply to the specification of composition, processing, performance, and acceptance of the adhesives that are to be used in the new design.

While the adhesives and O-rings may contain proprietary products, adequate control of materials and processes requires their full and complete description. Only with this information can adequate engineering control be exercised over the manufacturing process. To maintain quality control for materials used in critical applications, the suppliers must be restrained from making any changes to formulations or processes without engineering approval. Means are available for sharing essential proprietary information to assure control while maintaining confidentiality. We recommend that agreements with suppliers be negotiated and implemented to permit stringent engineering control of the materials and processes used in the solid rocket booster consistent with the protection of proprietary interests.

The requirement for finishes of metal surfaces in contact with O-rings poses a challenge to manufacturing techniques. We are pleased to note both the reported improvements in machining techniques and laboratory studies of the relationships between surface finish and sealing effectiveness. Much work remains to be done. We will continue to follow progress in these areas, including the measurement of surface finish.

Activities at Kennedy Space Center

As the design comes into final focus, our attention has also turned to the activities at Kennedy Space Center, where case segments are inspected, stored, and assembled into the flight articles.

Inspection. Regarding nondestructive evaluation of the integrity of case segments at KSC, previous practice has been to inspect segments visually when they arrive. The inspections are intended to detect flaws in bonds between the propellant and inhibitors and between the insulation and case. The segments are then stored in a vertical position until use. During storage, the segments are subjected to varying conditions of temperature and humidity and the case-to-insulation bonds are subject to various stresses. Individual segments can be stored for periods from months to years. In ballistic missile programs, similar circumstances have lead to extensive programs to control environmental conditions under which the motors are stored and to determine the response of the components to aging. We suggest that similar considerations apply in the case of the Shuttle SRB. Further, we recommend that motor segments be inspected again using more than simple visual inspection when removed from long-term storage before assembly.

Process control. Environmental conditions may also affect the assembly of the segments into boosters. The new design requires that a critical bonding process be performed during the assembly of field joints. While specific requirements are not yet defined, control of temperature, humidity, and cleanliness are essential for achieving reliable bonds. Other critical processes, such as lubrication of the field joint O-rings, are also performed in the Vehicle Assembly Building, emphasizing the need for a higher level of cleanliness in the facility than previously existed.

We recommend that the contemplated design and installation of an environmental control system suitable for protecting case segments during assembly be vigorously pursued. The objective should be to insure the most complete environmental control feasible. Requirements for enhanced cleanliness and environmental control should be reviewed, established, and implemented.

Plans for Flight Evaluation and Product Improvement

While we, like NASA, have been preoccupied primarily with issues of redesign and testing, we continue to be concerned with the evaluation of performance and improvement of the product after flights resume. The 51-L accident demonstrated the importance of conducting an on-going program designed both to evaluate the reliability and performance of the booster and its components in flight and to provide a basis for near-term product improvement.

A flight evaluation plan should provide for a comprehensive program of measurements in flight, inspection of recovered motors, and expeditious assessment of results of each flight before the next one. The verification plan currently envisions collecting extensive performance data on the first six flights of the new booster. But NASA must also remain in position to identify weaknesses in the design, manufacture, or assembly of the boosters in the long term so that corrective actions can be taken if necessary. Collection of performance data therefore should be continued until the data base is sufficient to demonstrate the required reliability and answer outstanding questions about production control and component functioning. Thereafter, surveillance data should be gathered and the program should constantly be alert to the need for taking additional flight data.

The flight evaluation program should also provide for design, production, evaluation, and introduction of limited modifications of the SRB in response to concerns of engineers regarding reliability of flight performance or problems in manufacturing, inspection, or assembly. The program should provide for preplanned opportunities for changes in order to introduce improvements required as a result of analysis of flight performance data.

Finally, once again I would like to express our appreciation of the willingness of the redesign team to discuss technical details and plans with us. The team members are dedicated professionals working hard to achieve their goals and to keep us informed, too.

On behalf of the Panel, I remain

Sincerely,

Guy

H. Guyford Stever
Chairman

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

November 20, 1987

The Honorable James C. Fletcher
Administrator
National Aeronautics & Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, DC 20546

Dear Jim:

I am pleased to submit herewith the fifth interim report of the National Research Council's Panel for the Technical Evaluation of the Redesign of the Space Shuttle Solid Rocket Booster. Since our last report, the Panel has conducted two formal meetings and members have met with the redesign team during three test readiness reviews, three technical interchanges, and the DM-8 hot firing.

In contrast to our previous letters, which have dealt with the SRB program as a whole, this report addresses only the test program in preparation for first flight. The test program is progressing well and has had some notable successes in recent months. A consequence has been heightened confidence in the baseline design. As additional tests are successfully carried out, the need to continue even the current minimal effort on contingent designs for first flight diminishes.

The overall testing program, including subscale tests, short-duration simulations, and full-duration firings, represents a commendably extensive effort--certainly large compared with that which preceded the first Shuttle flight and very demanding of resources. When completed, it is reasonable to anticipate that the design and performance of the joints and insulation of the Shuttle SRM will be better understood than those of any other large solid rocket motor. The timing of the program, working toward the next launch in June 1988, is "tight" and the Panel approaches with great reluctance suggestions which could impose additional items or time constraints on the effort.

Nonetheless, our review of the test program has led us to conclude that it could be further improved in a few significant aspects, which we commend to your attention:

- Despite a formal designation of the primary and secondary O-rings as the redundant seals, the designs of both the case-to-case field and case-to-nozzle joints use bonded insulation upstream of the primary O-ring to contain combustion gases within the motor. This characteristic of the designs emphasizes the importance of understanding how this insulation works as a joint seal. In addition to the work already planned, we recommend an evaluation of the sealing characteristics of the designs, including the respective flaps and adhesives, as functions of temperature, deformation rates, exposure to varied environments, and aging.

- Because both the case-to-case joint and the case-to-nozzle joint feature unvented designs, attention is required to assure that the performance of the primary and secondary O-rings is evaluated in the test program. We concur with the decision for a timely full-scale, full-duration motor firing in which pressurization of the primary O-ring in both joints is ensured. With no similar tests of the secondary O-rings planned on full-duration motors, we believe that the number of such tests planned for the short-duration simulation test articles should be increased. Furthermore, measures taken to ensure that the O-rings experience pressure in the respective tests also prevent the pretest application of pressure in the usual way to seat the O-rings in the proper direction. Special care will therefore be required in these tests to be sure that the primary and secondary O-rings are properly seated before firing.

- Because O-ring leakage can occur and not leave discernible traces in fired hardware and since the timing of leakage cannot be evaluated by post-test inspection, we recommend that the pressure both immediately upstream of the primary and between the primary and secondary O-rings in both the case-to-case field and case-to-nozzle joints be routinely measured in all ground tests, including full-scale firings.

- The repetitive tests planned to demonstrate how to make an effective insulation bondline in the case-to-nozzle joint by assembly and disassembly are very important. In addition, we believe that there should be at least one test each in which the case-to-nozzle and the case-to-case field joints are assembled, leak-tested, disassembled, cleaned-up, reassembled, and fired before first flight to simulate in advance an operation that may well be required after flight articles are delivered to the launch site. This latter type of test could be accomplished in short-duration simulation tests in the Joint Environment Simulator (JES), Nozzle Joint Environment Simulator (NJES), and/or the Transient Pressure Test Article (TPTA).

While most of these recommendations relate to the manner in which presently planned tests are to be carried out or to measurements to be made, some of the recommendations require additional testing on TPTA, JES, or NJES hardware. Recognizing the severe time constraints already imposed on these test units, the Panel recommends that if the schedule of test activities before the next flight is not sufficiently flexible to accommodate our recommendations for additional tests, consideration be given to providing the necessary room in the test program by deferring some of the testing now planned for so-called "manufacturing defects."

In closing, I am again pleased to congratulate NASA for the high degree of professionalism and dedication of the redesign team. We are grateful for the informative technical presentations and discussions which have facilitated our task.

Sincerely,

Guy

H. Guyford Stever
Chairman
Panel for the Technical
Evaluation of the Redesign
of the Space Shuttle
Solid Rocket Booster

LETTER FROM DR. H. GUYFORD STEVER, CHAIRMAN, PANEL ON TECHNICAL EVALUATION OF NASA'S REDESIGN OF THE SPACE SHUTTLE SOLID ROCKET BOOSTER

March 17, 1988

The Honorable James C. Fletcher
Administrator
National Aeronautics and Space Administration
400 Maryland Avenue, S.W., Room 7137
Washington, D.C. 20546

Dear Jim:

I am pleased to submit herewith the sixth interim report of the National Research Council's Panel for the Technical Evaluation of NASA's Redesign of the Space Shuttle Solid Rocket Booster.

Since our last report, the Panel has conducted three meetings and some of our members have attended the DM-9 Test Readiness Review, one run of the Assembly Test Article, three meetings of the Outer Boot Ring Anomaly investigation team, and the SRM Critical Design Review Level III preboard and board meetings. I also presented a testimony on the progress of the redesign effort to the Senate Subcommittee on Science, Technology, and Space on February 16th.

The Test Program

The test program has entered the critical certification phase; with test articles and the components of the first set of flight hardware already manufactured and no slack time in the program, the remaining tests will have to proceed essentially perfectly if the target date for the return to flight is to be met.

We concur with the decision to conduct three additional full-scale, full-duration motor firings before the return to flight, i.e., Qualification Motors #6 and #7 (QM-6, QM-7) and the so-called Production Verification Motor (PVM). In particular, the PVM will provide the only test in the program to verify the performance of the primary pressure seals in the case field joint and case-to-nozzle joint throughout the motor burn; we believe that this test is essential to the certification of the design. The results of the test, including assessments of the performance of the joints that are intentionally modified to assure pressurization of the primary O-rings, must be available for review before the return to flight. We also agree that the full-scale, full-duration low ambient temperature qualification motor test (QM-8) can occur after the return to flight provided that the test is conducted before the first launch at low ambient temperature.

The nozzle outer boot ring. Although the motor used in the DM-9 test might have resulted in a successful flight, the structural performance of its outer boot ring was unsatisfactory. Post-test examination revealed that the margins of safety for both the structural and thermal properties of the DM-9 outer boot ring (involute design) were intolerably small. It is our understanding that the exact causes of the unsatisfactory performance are still to be determined. The needs now are to (a) understand the reasons for the poor thermal and structural behavior of the involute design and (b) determine whether these reasons are applicable to the alternative, structural support design that is now baselined for flight. Any anomalous behavior of nozzle parts should be understood and corrective action taken if necessary before committing to flight.

The structural support design will be subjected to test in the three additional static motor firings before the return to flight. It should be noted, however, that as a consequence of the detailed investigation of the DM-9 result, fewer data are currently available on the structural support design than on the involute. Almost all of the confidence in the structural support boot ring arises from the DM-8 test, which was less demanding than the DM-9 test, and from the experience with the design flown in previous Shuttle flights, from which the concept of the structural support outer boot ring has evolved.

The DM-9 result illustrates that coupon data are insufficient for predicting the failure modes and characteristics of composite structures for design purposes. Even though the carbon cloth phenolic materials used in the two outer boot ring designs are ostensibly the same based on coupon tests and chemistry, the performance of the parts depends strongly on their internal geometrical configurations and fabrication procedures. The results of future full-scale tests of the outer boot ring should be assessed from a sound and adequate base of data from laboratory tests and in-process inspections.

The criteria for successful testing of the outer boot ring should be established before QM-6 is fired. We believe that test criteria should derive from design requirements. It is our understanding that the outer boot ring/flexible boot assembly is designed to prevent thermal damage to the flexible bearing. If that is the case, then suitable criteria would be expressed in terms of permissible damage (delamination, fracture, erosion, etc.) or the conditions needed to preclude damage to the bearing that would disqualify it for subsequent use.

Thrust vector control duty cycles. The duty cycle of the thrust vector control (TVC) system in the DM-9 test has been suggested as a potential contributing factor to failure of the outer boot ring in that test. We believe that the TVC duty cycles used in static motor tests should be realistic but should be significantly more severe than those experienced in flight to demonstrate the margins in the design. Since the largest mismatch between the thrusts of flight boosters is likely to occur during the last 10 seconds of motor operation, the largest angular deflections in nozzle tests should be imposed early during that period.

Hydroburst tests. A case hydroburst test was recently deleted from the program. We recommend that the test be reinstated to demonstrate the performance not only of the baseline design but also of recently manufactured case material qualified to current processes. The test can and should be completed before the return to flight without introducing delays. In addition, a second hydroburst test should be conducted after flights resume in which flight-qualified hardware is subjected to repeated cycles of assembly, pressurization, and disassembly to simulate 20 uses before being burst. In the latter test, the case segments should be examined between cycles to monitor performance.

Requirements

The interpretations of several important design requirements are as yet unresolved. The manner in which they are resolved can have significant effects on the program, particularly in light of the limited amount of testing that can be accomplished before the next flight.

Seal Systems. The program requirements specify that each pressure vessel leak path shall have redundant, verifiable seals and that each seal shall provide independent sealing capability throughout the motor burn without evidence of blow-by or erosion. Questions have been raised about the interpretation of the requirement in the development of criteria for success of tests in which the design has been intentionally flawed. Three types of tests are envisioned: of flight design motors, of joints with intentional flaws to simulate defects that might occur in manufacturing or assembly, and of joints that have been modified to study the performance of specific seals.

First, the success criterion for tests of joint systems without any intentionally introduced defects must be the requirement itself, no erosion or blow-by of seals, since these joint systems are of the flight design. These joints would only be tested if they passed post-assembly leak checks. We conclude that the same criterion should also apply in tests where joints are flawed in such a way that the flaws are not detectable by leak checks (the so-called manufacturing flaws), since flight articles must be able to accommodate this type of defect. This type of defect will be introduced into joints in QM-6 as well as on several short-duration test articles.

Third, tests that incorporate modifications of the hardware to assure that motor gas pressure reaches either the primary or secondary seal (the so-called pressure-assuring flaws) are intended to verify that the pressure seals will work if and when called upon. In our view, these tests, in which the seals will not pass leak checks, are essential for certifying the design. We agree with the viewpoint, expressed by some within the program, that the success criteria for these tests, including the PVM, need not be the same as those for tests of the flight design since the test hardware must be significantly modified from the flight design in the pressure-assuring tests. We conclude that an appropriate success criterion in the later tests might allow some erosion of the seal under test but should prohibit leakage past it. Thus, in tests where modifications are introduced to assure pressure to the primary O-ring, there should be no leakage past the primary O-ring and no erosion of or leakage past the secondary O-ring.

Reuse of Motor Cases. The current requirement specifies that case segments shall be designed for 20 uses. Currently, data are not available from which to judge whether the requirement will be met. Dimensional control in the area of the field joint interference fit may prove to be very difficult to achieve after a number of reuse cycles. In light of the uncertainties about reuse and because the lead time to obtain additional new cases is long, it is essential for both safety and maintenance of the schedule of future flights that a practical program to determine the realistic reuse potential of case segments be completed as soon as possible. The program should include the second of the hydroburst tests recommended earlier.

Grease. The requirements for reuse, surface finish, and other considerations argue for the liberal use of the corrosion-preventive grease. Liberal applications of grease, however, make it more difficult to satisfy the requirement for verification of pressure seals after assembly, since the grease may mask small leaks. The masking effect may, in fact, be beneficial; other rocket motor systems intentionally rely on liberal applications of grease to assist in the sealing function. In view of the clear benefit of corrosion protection, potential benefit of assisting in the sealing function, and uncertain arguments concerning the detection of small leaks, we conclude that in resolving the conflicting implications of the requirements for the design, priority should be given to assuring that liberal amounts of grease are applied to the O-rings.

Storage/Aging. The requirements also specify that motor segments must be usable after storage for five years. The motor contains a large number of polymeric/composite components; examples are the J-seal insulation and the case-to-nozzle joint insulation protecting the O-rings, the flexible boot and bearing, and the propellant. Materials such as these are subject to changes in properties due to aging during storage, changes that can be irreversible. Except for the propellant, the current program appears to be inadequate for understanding the aging of these materials and how aging characteristics under practical storage conditions influence the dimensional or other requirements on the polymeric parts.

Control of Materials and Processes

As we have stated previously, next to the design itself, the most important determinant of success, not only for the return to flight but throughout the flight program, will be assurance of the quality of materials, manufacturing, and assembly of motor components. Defining and maintaining the essential controls on materials and processes is critical to the reliability of the booster especially because the flight article itself cannot be test fired before use. Installation of environmental controls in the Vehicle Assembly Building at Kennedy Space Center represents an important improvement in controlling cleanliness for bonding, repair of debonds, and protection of components. We note below three additional areas where further attention is needed.

First, when lack of bonding occurs between the insulation and case, it is usually attributed to contamination of the surface with grease. For large debonds, a procedure has been specified for repair. We suggest that NASA qualify the procedure using realistic laboratory specimens to be sure that the technique for repairing defects does not inadvertently weaken the bonds.

A second area is the assembly of the case-to-nozzle joint while avoiding or controlling the occurrence of flaws in the polysulfide adhesive caused by trapped gas bubbles. A series of tests is being conducted to characterize the formation of these flaws and if possible to develop means for preventing them. The tests should include evaluation of the characteristics of the adhesive as well as procedures for its application that minimize or eliminate the occurrence of voids. The objective should be to establish appropriate controls on the materials, processes, and environment for assembly of this joint.

The third area concerns the insulation barriers in the case field joint and case-to-nozzle joint. Both employ an interference fit at the mating surfaces of rubber parts as well as open slots elsewhere so that the motor pressure will act to press the parts together. The dimensional tolerances and materials properties of the rubber parts are important for assuring proper joining. The case field joint insulation currently is accepted as a "product of the mold," of which there are six. The dimensions of molded parts can vary significantly, however. Therefore, we recommend that these parts be accepted based on "inspection to dimensions," the tolerances for which are determined to assure appropriate interference fits and adequately open slots. The desirable material properties of the components of the joint should also be defined and controlled.

Continuing Development and Product Improvement

The objective of the redesign effort is to return a safer and more reliable Shuttle to service at the earliest possible date. Safety and reliability, however, are not absolutes. The desire to provide the safest and most reliable design can conflict with the desire to return to flight as soon as possible. NASA has to make judgments about whether additional improvements are worth the delays in the return to service that they imply. Flying the Shuttle or any other space transportation vehicle will always entail accepting some risks.

Thus far, we find no evidence that the redesign team has taken or will be taking undue risks in favor of an earlier return to flight. However, in this as in other large aerospace systems, schedule and budgetary constraints have affected the program so that the risks associated with the first flight of the redesigned SRB, while acceptable, will be higher than if the program were not so constrained. It should not be necessary to continue to incur this additional level of risk throughout the service of the redesigned SRB, however, if there were a program of continuing development and product improvement beyond flight testing.

Maintaining such a program through the operational phases of aeronautical and space systems, in fact of any complex technological system, is simply prudent practice. The purpose is to improve not only reliability and hence safety, but also performance and cost on the basis of ground test data, analysis, manufacturing and operational experience. Such a program permits tracking and improving design features, materials, and processes that are identified as potential problems. This kind of program is particularly important for the SRB because of the complexity of the system, limitations on the testing program, and the national importance of reliable operation. The nature of the SRB is such that only flight subjects all of its components to realistic environments. Thus, the first few flights, which will be subjected to a more intensive scrutiny than later flights, should provide much data useful for defining and reducing risks.

We believe that it is essential that NASA have in place an appropriately staffed and funded program for planning and implementing a continuing development program, including provision for the requisite ground tests and determination of flight performance; the means to analyze results, upgrade and evaluate designs; and provision to introduce risk-reducing improvements into flight hardware and operations. An important result of a continuing development and product improvement program will be an increased understanding of the capabilities of the SRB, leading in turn perhaps to lower operational costs. We recommended such a program in previous reports.

Having such a program requires advanced planning, which should begin now if it is to be effective. The program should have continuity with the technical efforts of the redesign program and should include dedicated personnel, continued development of analytical and computational capabilities, continued use of appropriate subscale and short-duration test facilities, full utilization of all currently planned ground firings, and provision for use of selected flight instrumentation after the sixth flight of the redesigned SRM. In those instances in which the element under consideration affects safety, it is essential that the program incorporate a plan for certification and adoption of modified designs, materials, or processes on a timely basis.

Critical Design Review

As we understand it, the Critical Design Review (CDR) is conducted to assure that the design meets the requirements. In the current instance, the timing of the CDR was unusual because the first flight set had already been built. Thus, it seems unlikely that this CDR would result in a change in the design, except in the unexpected event that an egregious error were discovered. The plan for verifying that the design meets the requirements was also considered in the CDR, and its review was more timely.

The CDR process is designed to assure that no member of the review team is inhibited from raising issues that he or she believes to be important. While this objective is laudable, it also plays a role in the major weakness of the process: There appears to be no means for assuring that the CDR board deals in sufficient depth with the most important questions.

The board considers only the recommendations of reviewers that have not been resolved in the several review teams or by the preboard. Some of these may have been important, but a number of issues brought to the board appeared to be of questionable overall importance. Almost all requests for additional studies, tests, or analyses were approved; which ones must be completed before return to flight remains to be determined. Whether many of the others will ever be done remains uncertain.

It appears to us that issues of critical importance to the program may often be agreed and resolved at a lower level in the review thus escaping the proper attention of the board. Lower level reviews should concentrate on the less critical items with higher level reviews concentrating on the more important issues, whether or not the issues are controversial. We recommend that NASA reconsider future review board procedures to assure that the board formally considers and concentrates on the issues of highest priority.

In our second interim report, we commented on the lack of a clear separation of organizational responsibility for defining requirements, making design choices, and conducting design reviews. Based on the observations of members of the Panel who attended the recent Level III SRM CDR preboard and board meetings, we could not distinguish the differences between the roles of NASA Level III and those of its contractor in the preboard meeting nor was it clear that the participation of NASA Level II in either the preboard or board meetings thus far has assured an independent review. The current observations confirm our earlier comment.

We conclude, however, that the CDR has provided an essential forum for identifying and airing issues that may be considered unresolved at this time. The atmosphere at both meetings encouraged free and open discussion. There was obviously considerable effort to be impartial, treating all comments fairly.

In closing, I wish again to express our appreciation for the cooperation of the redesign team and other NASA personnel in conducting our activities.

Sincerely,

Guy

H. Guyford Stever
Chairman

RISK FACTOR

Senator GARN. Thank you, Dr. Stever. This is your first appearance before the subcommittee, and I appreciate very much your taking the time out of your busy schedule to present the National Research Council's assessment of the redesign effort.

I had already quoted you in my previous questioning to Dr. Fletcher. Do you find acceptable the risks associated to the first fly RSRM given, as you put it, the constraints of working within schedule on the budget?

Dr. STEVER. Senator Garn, that is not my responsibility, to find it acceptable. I am supposed to comment on——

Senator GARN. Would you fly on it?

Dr. STEVER. Oh, yes, sir. I am 71 years old. What an opportunity. [Laughter.]

Dr. FLETCHER. I will sign up for that, too, Senator Garn.

Dr. STEVER. Certainly.

SAFETY AND RELATIVE SAFETY

Senator GARN. That answers my question, even if you are 71. I am still foolish enough to like to go to Mars.

Dr. STEVER. I hope you make it, too. Senator Garn, this question of safety and relative safety, a decision on that comes up all the time. I think NASA has and the redesign team and the other people involved, the ones who will make the decision on the spot, hopefully, before the end of August, they are very well aware of all of the risks involved and how well they have done the job and what needs to be done before that time, and there are some things that still have to be done, and if you ask me am I satisfied, I am satisfied that they know now the state of the technology so much better than in the past.

Senator GARN. I would assume that it is accurate to say that no matter how long we took, there would still be some engineers that would want to do more.

Dr. STEVER. Yes.

Senator GARN. Even if we took another year.

Dr. STEVER. Certainly. You know statistics, statistical testing to get good statistics on anything is very important, and whenever NASA can do it, it does get a lot of statistical testing, but the solid rocket motor is not the kind of thing that you can do.

NEED FOR ENGINEERING JUDGMENT

You eventually just plain run out of money to get enough of a statistical base there. Therefore, you have to use engineering judgment; all of the background you already have, and they do have all the background from the 25 flights and lots of subscale testing and so on.

But engineering judgment has to, at this, it has to replace, in part, statistical data.

Senator GARN. I understand, and I don't disagree. I guess the point that I am driving at, I am certainly not capable and do not have the background to make those decisions. However, I am not concerned about this team making that proper decision when the time comes.

I guess the point I am trying to get to is at some point, you have to stop; you have to make those decisions, and in an entirely different way that doesn't involve safety. I look at the copper operation, when we were trying to improve the environment out there and spent several hundred million dollars taking out 92 or 93 percent of the pollutants, and then the issue was, did they take another 3 or 4 percent out, the costs of another couple of hundred bucks.

That is—What is the margin there between 92 and 95? I guess that is what I am looking at. When we reach that point, if we took another 6 months or another year and did more of these things, it would seem to me that you would undoubtedly probably gain some additional safety but in a very general sense, it wouldn't it be rather marginal, rather incremental?

Dr. STEVER. Certainly. Certainly. However, you are asking me to state a risk that I am not going to take, obviously.

Senator GARN. But the person who is asking you the question did take that risk and is willing to take it again.

ASTRONAUTS INVOLVED

Dr. STEVER. I understand that. One of the best parts of working with NASA and Thiokol and the Air Force is that we have had with us, not all the time, but a good portion of the time a representative of the astronauts, and I am very pleased that A, that they are getting an understanding, just like the engineers of NASA and Thiokol, of the risks and the safety and the reliability and so on, and I think when they judge it, as far as I am concerned, when they judge that risk to be reasonable, I would be happy.

Senator GARN. I don't know that that is a good measure, because my experience with the astronaut corps is we would always fly before the engineers would let us, so I don't know that that is good. Is that Hoot Gibson?

Dr. STEVER. He was for awhile, but Steve Oswald has been with us more recently. Let me say that I think the astronauts can sit right in there with J.R. Thompson and me and members of our committee and all the NASA people and the Thiokol people and conduct a good share of technological arguments that go on.

Senator GARN. I have got to tell you a story, and everything is relative. Hoot Gibson is Rhea Seddon's husband, who flew, or I flew with her on her flight on one of the husband and wife astronaut teams, and we have become very close friends. We allow Hoot Gibson to come as a spouse to our crew reunions, not as a shuttle commander, but as a spouse.

The whole crew was out skiing with me. Hoot will never forgive me, because we are at the top of what is known as Blue Slip at Park City and Blue Slip is one of those black diamond type of runs. Hoot looks at this practically vertical run with very large moguls.

We were trying to encourage him to go down. Hoot said, "I'm not going down that thing. I wouldn't go down that under any circumstance." Here is a space shuttle commander, but he is not going to ski down this hill. And I said, "Do you mean to tell me a United States space shuttle commander does not have the courage to go down that hill."

And he said, "That's right. That is exactly what I'm telling you." I said, "Well, Hoot, do you mean to tell me that a Top Gun graduate, a Top Gun graduate does not have the courage to go down there?"

He looked at me and he said some words that I would not repeat, referring to me, in this hearing for the record and started down. About a half an hour later when we finally got him down, he said, "Nothing you ever say to me about courage will get me to do that again." [Laughter.]

He said, "I will fly the shuttle under any adverse conditions with leaking O rings or anything else, but I am not going down Blue Slip again." So there is a difference.

Dr. STEVER. I think your story indicates that astronauts will take risks when they think they are doing something very important, and that is really the whole point.

Senator GARN. I thought it was important to go down Blue Slip. [Laughter.]

ADEQUACY OF NASA'S PREPARATION

As you noted in your statement, "Next to the design of assurance of quality, materials, manufacturing, and assembling of motor components," the most critical aspect of this hearing's success is, are you satisfied with NASA's effort to provide us assurance in discussing the needs you carefully review flight data to take corrective actions, and continue an aggressive test program. After your flight status you know the significant costs associated with this committee, and we have discussed that before.

But in your view, is NASA adequately preparing and budgeting for that requirement in light of the constraints that are being placed on them?

Dr. STEVER. I can't speak to the budgeting. They would have to answer that. We have had a lot of discussions about what should be done, and I am not quite sure we would come, see eye-to-eye on the number of tests that we should have, measurement equipment, and that sort of equipment and so on.

However, they certainly do believe that some of the flights will be instrumented and that, obviously, they will be inspected, and as already pointed out, they will occasionally fire a full-scale motor to try out some other things and perhaps add something on during the program. But you would have to ask them about the budget.

Senator GARN. One final question, and I will tell you what my assessment is, telegraph my opinion prior to asking you the question.

SAFETY OF TOTAL SHUTTLE SYSTEM

But despite your cautions, concerns, continuing adequate testing, and all of that, it is my opinion that not just the sold rocket motors, but the orbiter, the main engines, the entire system, after this effort is much safer than the vehicle's total shuttle system we were flying before, even recognizing what I have said before, that there are inherent risks and there always will be.

Is that your opinion, that redesigned SRM's, the shuttle itself, the main engines, the entire system is a safer vehicle than when we were flying in the first 24 flights?

Dr. STEVER. Oh, yes, yes. You have brought in a couple of personal attitudes. In my life, I have been a gungho supporter of space, too. This particular assignment I have, I am supposed to be critical and tell them, tell NASA and my committee is supposed to be critical, and we are sticking to that assignment right up to the end.

Senator GARN. Well, I understand. That was your responsibility, and I appreciate the fact that you have carried that out.

Dr. Fletcher, do you have any additional comments you wish to make?

Dr. FLETCHER. I think you have thoroughly aired the problem. We do need the ASRM. We do need the Shuttle C; we do need the fifth orbiter. It is a question of, and we do need a space station. It is a question of priorities. I think you have outlined the problem very well.

Senator GARN. Gentlemen, I appreciate all of you being here today.

PREPARED STATEMENT

Before we close, Senator D'Amato has submitted a statement which, without objection, I will insert in the hearing record at this point.

[The statement follows:]

STATEMENT OF SENATOR D'AMATO

Mr. Chairman, I am pleased to welcome to this hearing NASA Administrator Dr. James Fletcher and Dr. H. Guyford Stever, Chairman of the National Research Council's panel to evaluate the redesign of the space shuttle solid rocket booster. I look forward to reviewing their testimony on the status of NASA's solid rocket motor redesign program, as well as its plan to develop the next generation "advanced solid rocket motor" [ASRM].

As Dr. Stever's testimony indicates, the National Research Council has conducted an extensive ongoing evaluation of the redesign and certification of the shuttle's solid rocket motors. Because this redesign is essential to NASA's efforts to return the shuttle to flight status, I am particularly interested in the Council's findings and recommendations.

In six reports issued to date, the Council has focused not only on the status of the current redesign program, but also on the need for additional changes once the shuttle is returned to flight. Of particular importance, the Council has found that several changes made in the case field joint—which was identified as the cause of the *Challenger* accident—offer substantial improvement over the original design. In addition, the Council notes that the testing program has been considerably more thorough than the one that preceded the first shuttle flight. However, the central theme in the Council's reports is the necessity of assuring quality in materials, manufacturing, and assembly of motor components.

While Dr. Stever's testimony emphasizes the immediate role of the redesigned solid rocket booster in returning the shuttle to flight status, Dr. Fletcher's testimony addresses the future role of the advanced solid rocket motor in the shuttle program. Scheduled for first flight in 1994, the ASRM is intended to provide significantly improved safety, reliability and performance over the shuttle's current boosters. It is my understanding that, flown with the ASRM, the payload capacity of the shuttle is expected to increase by approximately 12,000 pounds. This equates to an additional 2.4 equivalent shuttle missions per year (at a flight rate of 14 missions per year).

To ensure the safety and quality of the ASRM, NASA is recommending the construction of a modern manufacturing facility. This facility would be highly automated, with strict process controls, and would be adaptable in terms of motor size and quantities.

The estimated total cost for ASRM design, development, testing, and evaluation is $1 billion. An additional $200 to $300 million would be required for construction of the ASRM manufacturing facility.

In view of its long-term implications for our nation's space transportation program, the advanced solid rocket motor program is of vital interest to this subcommittee. In addition, the subcommittee continues to monitor NASA's near-term efforts to return the shuttle to flight status. We look forward, therefore, to the testimony of our distinguished panelists.

Thank you, Mr. Chairman.

CONCLUSION OF HEARINGS

Senator GARN. That concludes the hearings. The subcommittee will recess and reconvene at the call of the Chair.

[Whereupon, at 11:50 a.m. Wednesday, June 8, the hearings were concluded and the subcommittee was recessed to reconvene at the call of the Chair.]

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AND

OFFICE OF ENVIRONMENTAL QUALITY

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